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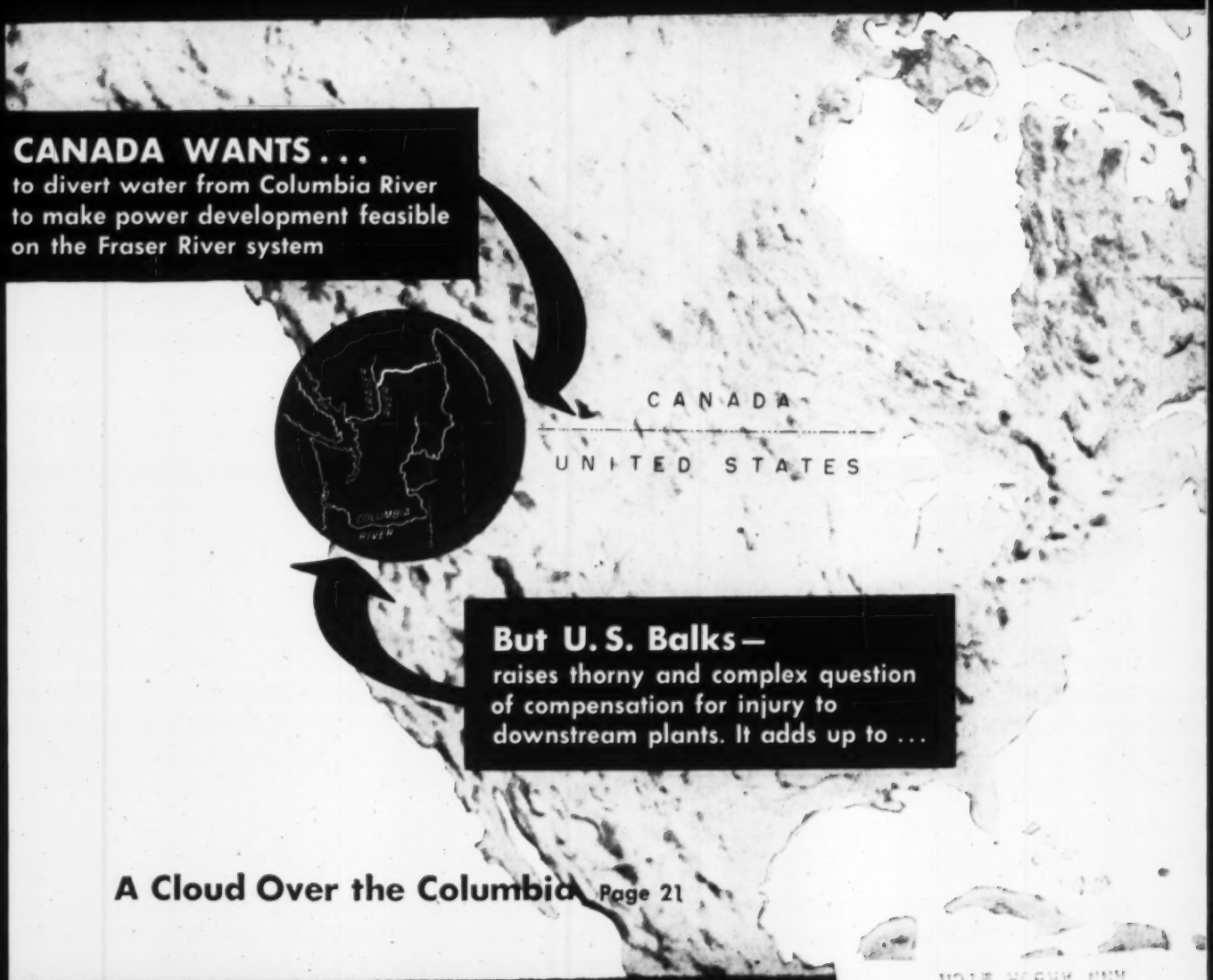
CANADA WANTS . . .
to divert water from Columbia River
to make power development feasible
on the Fraser River system
CANADA
UNITED STATES
But U. S. Balks—
raises thorny and complex question
of compensation for injury to
downstream plants. It adds up to . . .

A Cloud Over the Columbia Page 21

A McGRAW-HILL PUBLICATION

Modern Fontainebleau Hotel relies on time-tested Wrought Iron Pipe

Luxury is not without its practical aspects in the new Fontainebleau Hotel in Miami Beach, Florida, as evidenced in the installation of reliable wrought iron pipe.

To assure uninterrupted service with no costly corrosion problems, the designers chose wrought iron for all steam condensate return piping throughout the hotel. And in the hotel's Olympic-size swimming pool, wrought iron pipe in sizes up to 10" in diameter was installed to provide salt water and return the backwash to the sea.

Architect: Morris Lapidus
Miami Beach, Florida
General Contractor: Taylor Construction
Company, Miami, Florida
Engineers: Susnett and Bennet
Miami, Florida
Mechanical Contractors: Markowitz
Brothers, Inc., Miami, Florida

When the merits of a long-life installation of wrought iron are stacked up against the shorter-lived service of metals with lower initial cost, wrought iron wins out with cost-conscious management. Examples of these money-saving decisions are covered in our booklet, *Wrought Iron Pipe for Modern Building*. Your copy will provide you with a source of ideas that's bound to pay off. Write for it today.

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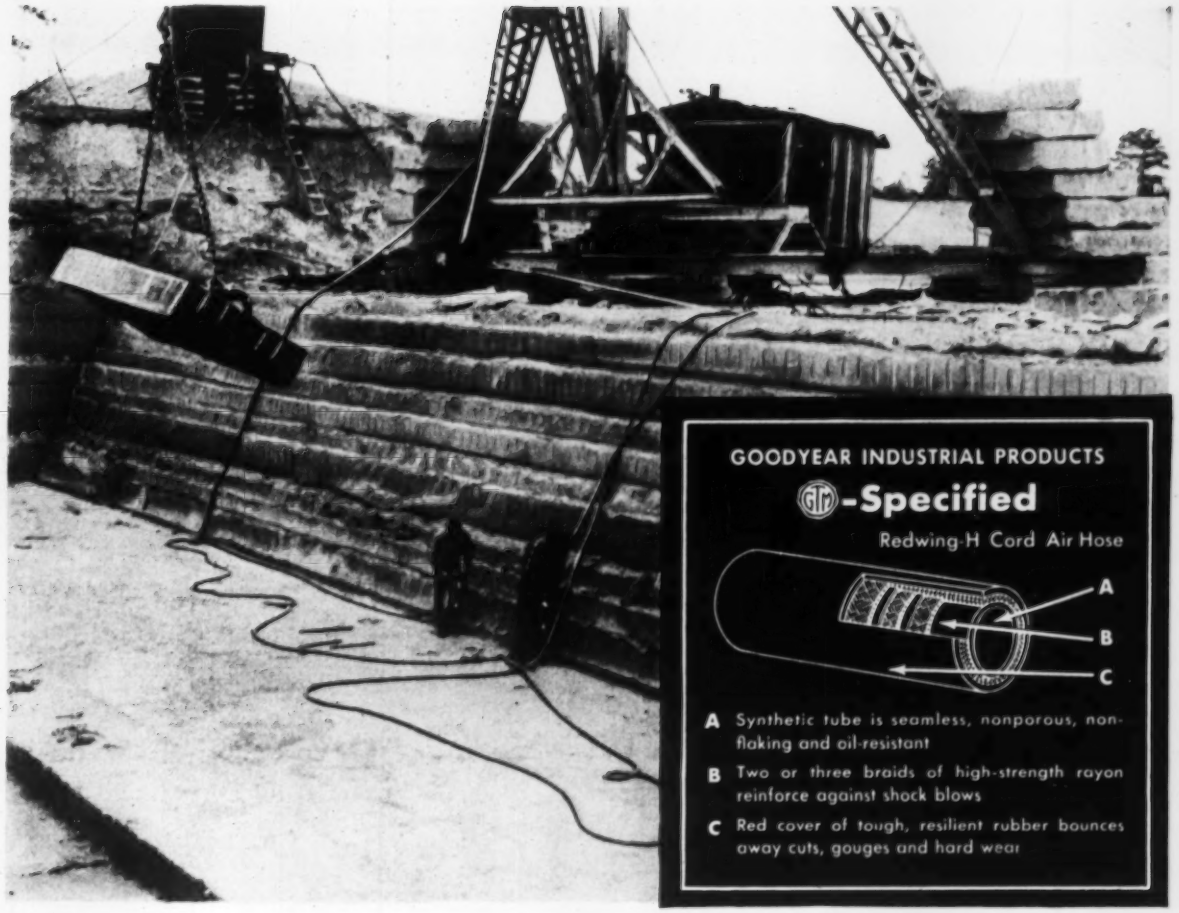
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B
C
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B Two or three braids of high-strength rayon reinforce against shock blows
C Red cover of tough, resilient rubber bounces away cuts, gouges and hard wear

G.T.M. cuts jackhammer hose costs over 50%

About four months was the average service for air hose on the jackhammers in this Midwestern quarry. Extreme abrasion, cutting and gouging plus direct blows from heavy rock were the reasons for early failure.

REDWING-H Cord Air Hose (see blueprint) was specified by the G.T.M.–Goodyear Technical Man. This rugged hose takes the beating in stride–lasts over a year–three times as long–cuts costs by more than half.

Similar savings may be yours, on hose or any industrial rubber goods, by consulting the G.T.M. You can contact him through your Goodyear Distributor. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

Redwing–T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

REDWING-H CORD AIR HOSE by

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Symons FIELD REPORT...

Symons Forms, Shores and Column Clamps Used On 525 Ft. Aqueduct at Streator, Illinois...

to carry a 27-inch pipe across a ravine.

Symons solved the difficult task of setting up to pour concrete around the vitrified tile pipe, averaging 225 pounds per foot. Weight of pipe and poured concrete is over one ton per lineal foot.

Footings 7' x 7' and 13" thick were first built for the concrete piers spaced 25 feet apart. Symons Column Clamps were used to form the piers—12" x 24" at the base, 12" x 48" at the top and range in height from 10 to 19 feet.

The aqueduct is 4'3" wide and four feet high. Symons Forms with steel cross members and 51-inch ties were used to form the sides, which were supported by one set of walers.

Three-quarter inch plywood formed the beam bottom, resting on 4" x 4" joists. Girths 4" x 6" were spaced every four feet and supported by Symons Safety Shores. Warren & Pragg, Decatur, Illinois, was the architect and Central Ironite Waterproofing Company, Maywood, Ill., was general contractor.

Symons Forms, Shores and Column Clamps can be rented with purchase option, all rentals to apply on purchase price. Symons Clamp & Mfg. Co., 4265 Diversey Ave., Dept. H-6, Chicago 39, Ill.

View showing completed piers and aqueduct

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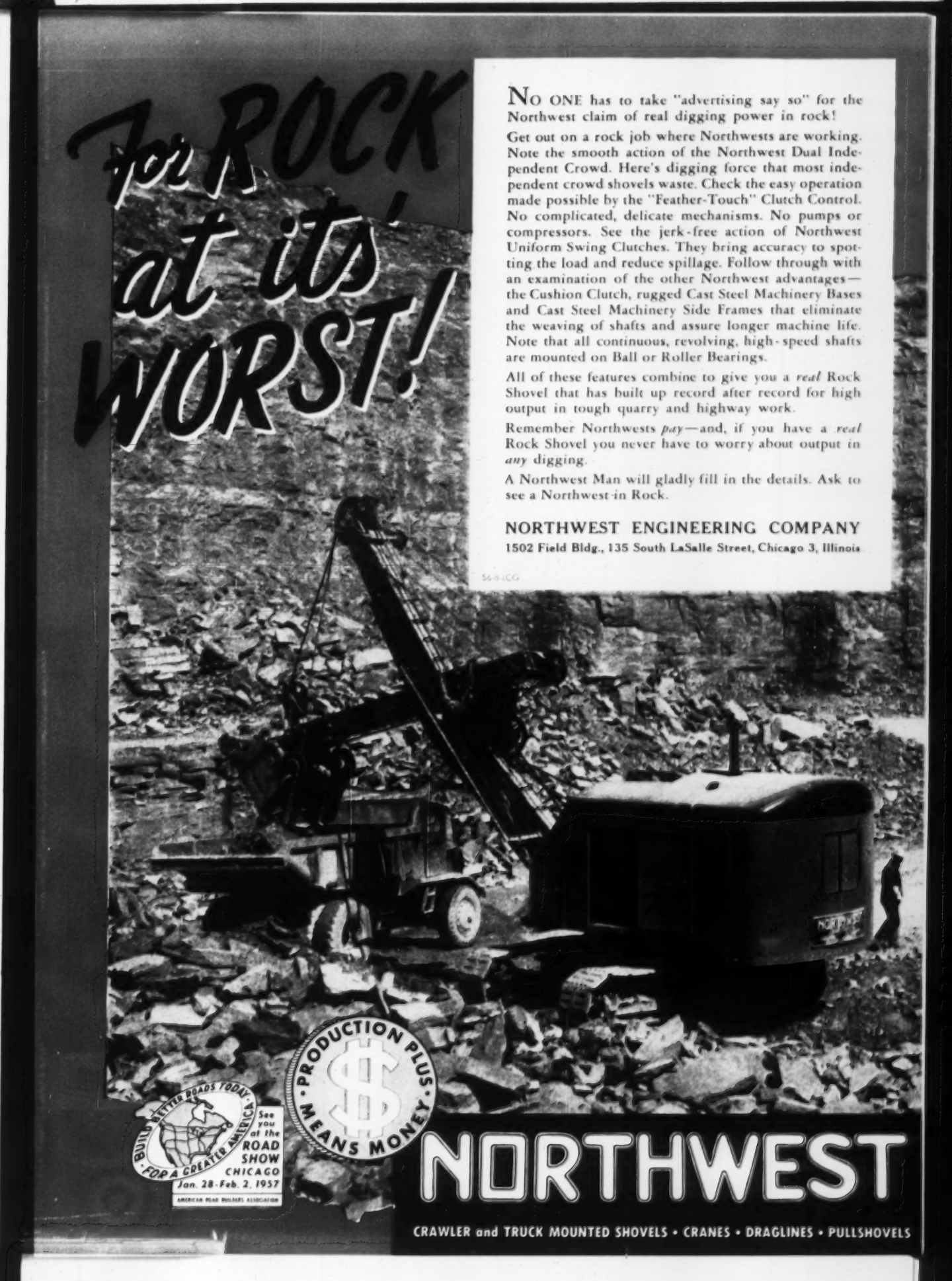
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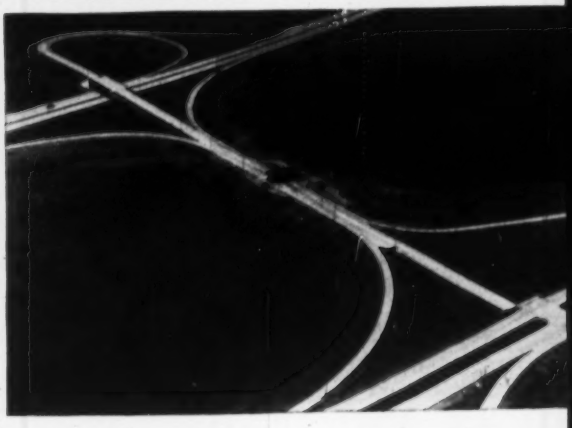
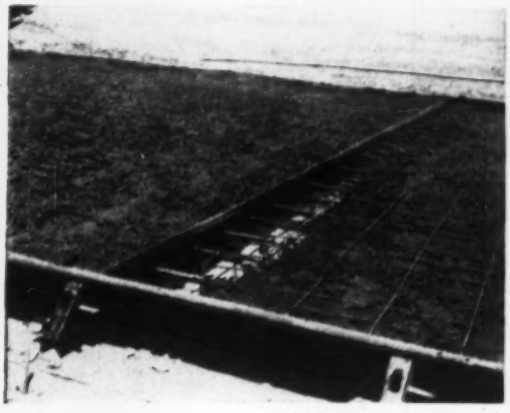
PENNSYLVANIA TURNPIKE



OHIO TURNPIKE



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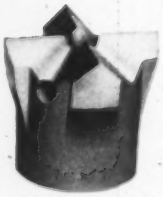

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Timken threaded carbide insert rock bit

Reader Comment

More on Long Piles

SIR: The article in Engineering News-Record, of July 19, 1956, on the use of pretensioned piles 132 feet long by the Port of San Francisco was an example of excellent reporting. I would like to add a few clarifying remarks on the selection of pick-up points for the long piles. When five or more pick-up points are used, the length of the slings and the height of the point of suspension above the pile assume a major importance and have to enter the calculations since the resulting bending moments are far removed from what would be obtained by assuming the pile to be a continuous beam on five or more supports.

I would also like to give credit to the contribution made by Mr. J. P. Wong, formerly Associate Harbor Engineer with the Port of San Francisco, who worked on the development of the graphical method of analysis for piles picked up at five or more points.

ARTHUR A. EZRA,
Senior Harbor Engineer,
Port of San Francisco.

Congressman on Pollution

SIR: It was with no little disappointment that I read the editorial, "Moving Too Fast" in the June 7 issue of Engineering News-Record. In the opinion of a great many people, this country has been moving much too slow in the control of water pollution. As you know, I share that view.

According to a report issued by the Public Health Service, contract awards for sewage treatment construction last year were off by about 20% compared to the previous year and were well below the average for the last eight years. Yet 1955 was the most prosperous year in the history of the country.

During the hearings on the legislation to extend the Water Pollution Control Act—and as a matter of fact in your St. Louis Conference—it was repeatedly pointed out that the construction of waste treatment works has consistently fallen behind the needs in recent years.

This is not the appropriate occasion to review the pros and cons of federal assistance in the construction of sewage treatment plants, but it does seem to me, in view of all the evidence that has been presented, that the time has come for more positive action. Your editorial seems to say that federal assistance in the construction of local sewage treatment works should not even be considered until all the questions concerning the ability of local communities to finance their own projects have been answered.

In disagreeing with this position, I do not mean to disparage the need for more study. Certainly we need much more factual information on all aspects of the pollution situation and its relation to the total water resources problem in the United States. But to suggest—as your editorial so clearly does—that we should be content with the present rate of construction until the ideal system of financing pollution abatement projects has been found is to invite really serious trouble a few years from now.

As you know, the legislation to continue the Water Pollution Control Act of 1948 was passed by an overwhelming majority in the House, and the House-Senate conference report was passed by both bodies without objection. I believe this legislation provides a basis for a program of pollution abatement in the United States commensurate with the seriousness of the problem. I hope that the program will have the support of your publication. It would be invaluable.

JOHN A. BLATNIK
Member of Congress
Washington, D. C.

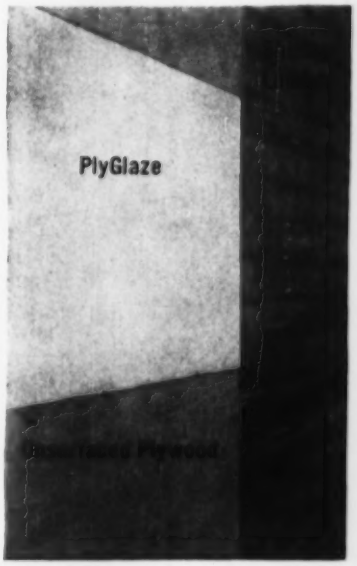
[EDITOR'S NOTE: Congressman Blatnik's stimulating comment came before passage of the nation's creditable new pollution control law, at a time when ENR had grave doubts (expressed editorially June 7) about the results of rushing into federal aid without controls on disbursement of such aid. As Congressmen Blatnik now knows from our editorial of July 12, we are pleased with the final law, as so deftly shaped in Congressional conference committee; it has in it just the controls called for as a result of ENR's conference on the question. Congressman Blatnik, whose name was on the original House bill which introduced the federal aid idea, is to be credited for his large part in framing the new law. He has the support of ENR for which he asks.]

CALENDAR

Illuminating Engineering Society, annual technical conference and fiftieth anniversary celebration, Statler Hotel, Boston, Mass., Sept. 17-21.

Building Research Institute, Modern Masonry Conference, Hall of Flags, U. S. Chamber of Commerce Bldg., 1615 H St. N.W., Washington, D. C., Sept. 19-20.

Noise Abatement Symposium, seventh annual meeting, Hotel Sherman, Chicago, Ill., Oct. 11-12.



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More proof that CAT* LOWBOWL Scrapers deliver bigger, faster loads

Handling tough material on the Florida Turnpike, a new DW21 (Series C) Tractor-No. 470 LOWBOWL Scraper averaged 128 pay yd. an hour on a 6900-foot round trip

RESULTS OF FLORIDA TURNPIKE JOB TEST

JOB AND LOCATION: Building 3.8 miles of new road on Florida Turnpike, near Hollywood. The job involves moving about 1,000,000 cu. yd. of sand. The contractor: Troup Bros., Inc., Miami. **CONDITIONS:** *Material*—very fine, loose white sand with an estimated shrinkage of 25%, borrow to compacted. *Loading*—D9 (Series D) Tractor with torque converter used for pusher. *Haul distance*—3250 feet over loose to damp, compacted sand, maintained by a No. 12 Motor Grader. Rolling resistance, 100 lb./ton. *Return distance*—3650 feet. *Grades on haul*—400 feet of 1°-3° adverse and 600 feet of 1°-2.2° adverse.

TIME STUDIES

AVERAGE	DW21-No. 470 LOWBOWL Scraper
Load time	.44 min.
Haul time	3.33 min.
Haul speed	11.14 MPH
Spread and turn time (180°)	.38 min.
Return time	3.37 min.
Return speed	12.31 MPH
Wait time	.39 min.
Total cycle time	7.91 min.
Trips per hour	7.59
Pay yd./trip	16.8
Production pay yd./hour	128

REMARKS: The loose, fine sand was difficult material to load. In spite of this, average loading time was excellent, due to the fast-loading characteristics of the new No. 470 LOWBOWL Scraper. Average cycle time was excellent, too—a reflection on the new DW21's Turbocharged power and wide-base tires!

Recent tests on the Florida Turnpike confirm previous reports from other jobs in Iowa, Kansas and New Jersey—the new Caterpillar LOWBOWL Scraper steps up production with bigger, faster loads. Here's proof again that on the job, where results and only results pay off, the new LOWBOWL design delivers a new high in money-making performance.

Says Donald R. Grubbs, Superintendent for Troup Bros., Inc., Miami: "I like the wide-base tires on this new DW21—they help us over this sandy fill. The new LOWBOWL Scraper design also cuts down our loading time. What's more, we've had very little down time with our Caterpillar equipment."

Before you make your next bid, get the full facts about the new LOWBOWL Scrapers. Your Caterpillar Dealer's salesman carries completely documented details about their productive capacity on this and other jobs. Ask him to show them to you!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

The new two-wheel Cat DW21-No. 470 LOWBOWL Scraper. A new four-wheel DW20-No. 456 LOWBOWL Scraper is also available. Both units have a capacity of 25 cu. yd. heaped; 18 cu. yd. struck. Both feature the new Turbocharged, 6-cylinder Cat Engine which delivers 300 HP (maximum output) and 10% more rimpull. New LOWBOWL design loads more material with less resistance clear to the end of the loading cycle. Wide-base tubeless tires, now standard equipment, eliminate an estimated 30% of down time caused by tires.

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Hairpin turns with a mountain-climbing finisher

Here's a grueling test of superior traction; yet, the Barber-Greene Crawler-Mounted Finisher provides positive traction and steering even while pushing loaded trucks up steep grades on slippery primes or on soft bases. Short over-all length and crawler traction also assure superior maneuverability . . . save time when paving a mountain road or a downtown boulevard.

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Ease of control . . . superior maneuverability: Operator has unrestricted view of truck dumping, material level in spreading screws and finished mat.

Time-saving hopper: Receiving hopper is amply wide for fast truck changes and easy discharge without spillage.

World-wide service and parts: Available from local stocks on short notice all over the free world.

Crawler traction provides easier maneuverability—saves time and space when turning around.

Write for literature on this pace-setting finisher.

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Barber-Greene BG

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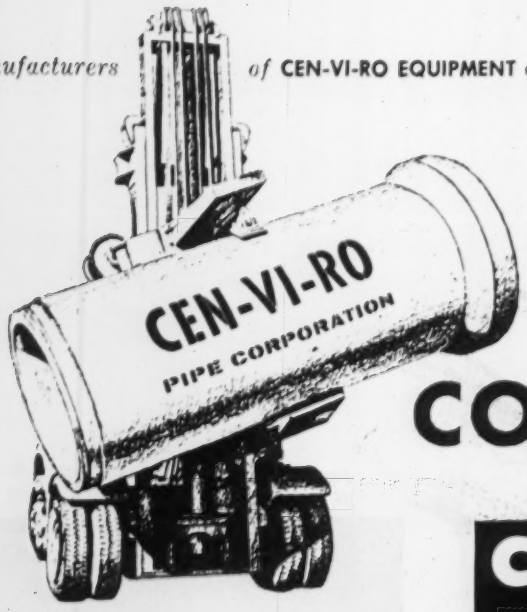

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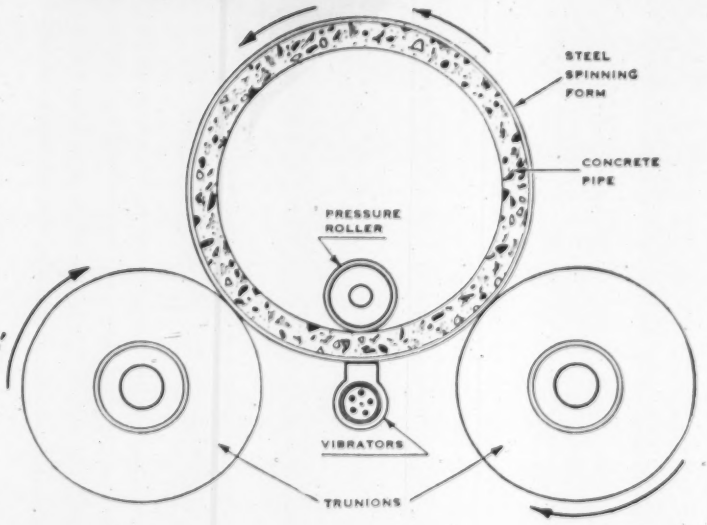

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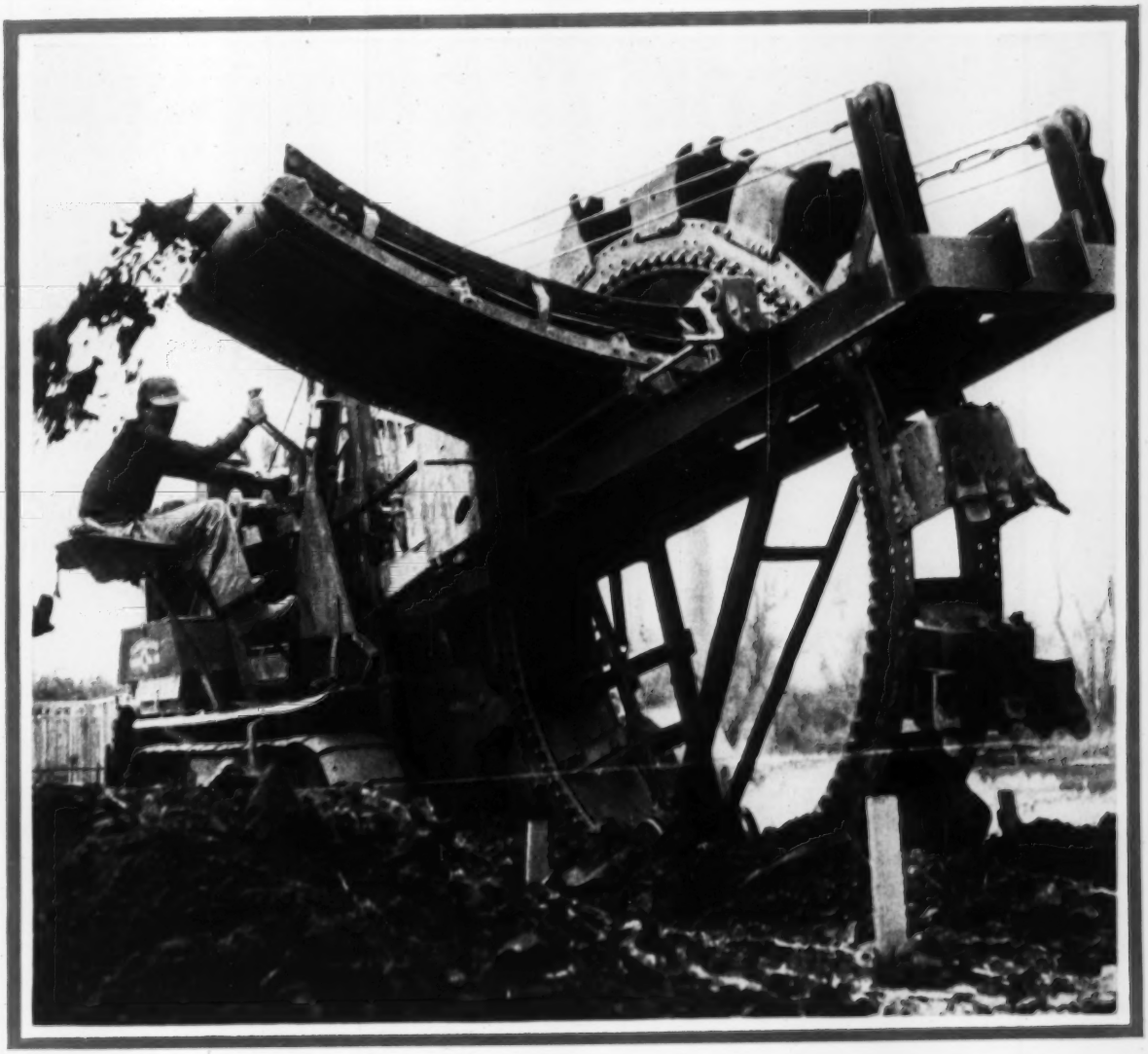

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"Union's UNOBA is the one grease we can rely on to keep our equipment on the job. It's the most satisfactory and, in the long run, the least expensive of any grease I know.

"That's because UNOBA grease increases the life of bearings and other critical parts. Take the lower truck rollers and bearings on this Cleveland 110 trencher for example — these are original parts that have had nearly four years' service. That's as much as five or six times the life we used to expect from these parts before we started lubricating them with UNOBA."

Bill Howard's report on UNOBA is a typical one. This barium-lithium base grease gives amazing protection to bearings that are subjected to severe conditions of dust, heat, moisture and high loadings. If any of these are a problem in your equipment we suggest you ask your nearby Union Oil representative about UNOBA *multi-purpose* grease.

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ALLISON TAKES ANOTHER IN POWER TRANSMISSION

New "FourSpeed" Torqmatic Drive boosts vastly increasing hauling ability both

Built for the big jobs – that's the story behind the new Allison "FourSpeed" TORQMATIC DRIVE.

With its 350 horsepower rating, this TORQMATIC Converter-Transmission team has the brawn and heft to take the biggest loads and toughest hills, like a breeze.

The TORQMATIC Converter provides silken smoothness during starts and speed changes – the automatic lock-up drive provides big fuel savings during extended runs, and speeds hauling cycles on every road over any terrain.

This quick-shift TORQMATIC Transmission has the driving ease that makes the biggest off-highway trucks and scrapers handle like a driver's dream come true.

And with the built-in TORQMATIC Brake (optional), it's got a big extra margin of safety.

Many leading manufacturers of scrapers and off-highway trucks are planning to install this new "FourSpeed" TORQMATIC DRIVE to increase the performance standards of their equipment.

And the reason for the tremendous interest in this newest of all TORQMATIC DRIVES is simple.

It's the only heavy-duty converter-transmission team with an automatic lock-up drive, quick-shift range selection and TORQMATIC *Brake in one compact unit that is easy to install, free of troublesome piping and other miscellaneous accessories.*

For full details on the great new Allison "FourSpeed" TORQMATIC DRIVE in the equipment you buy or build, write Allison Division of General Motors, Box 894B, Indianapolis 6, Indiana.

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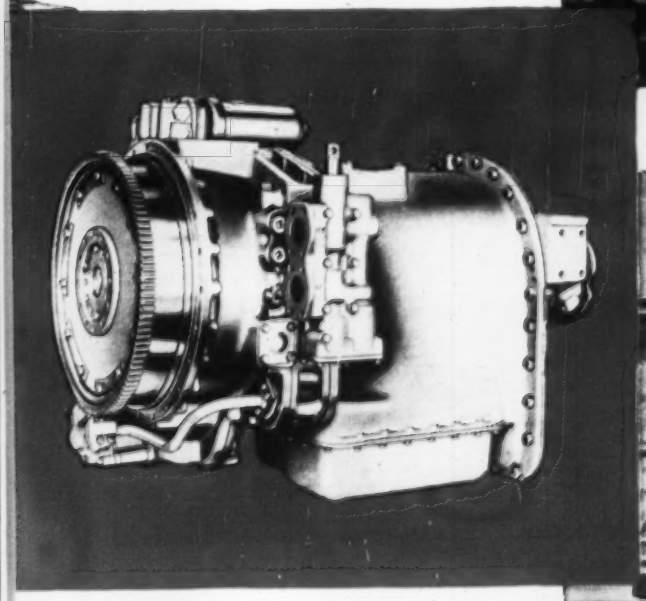

GM TORQMATIC

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TORQMATIC DRIVES

78 JENKINS PRACTICAL PIPING LAYOUTS

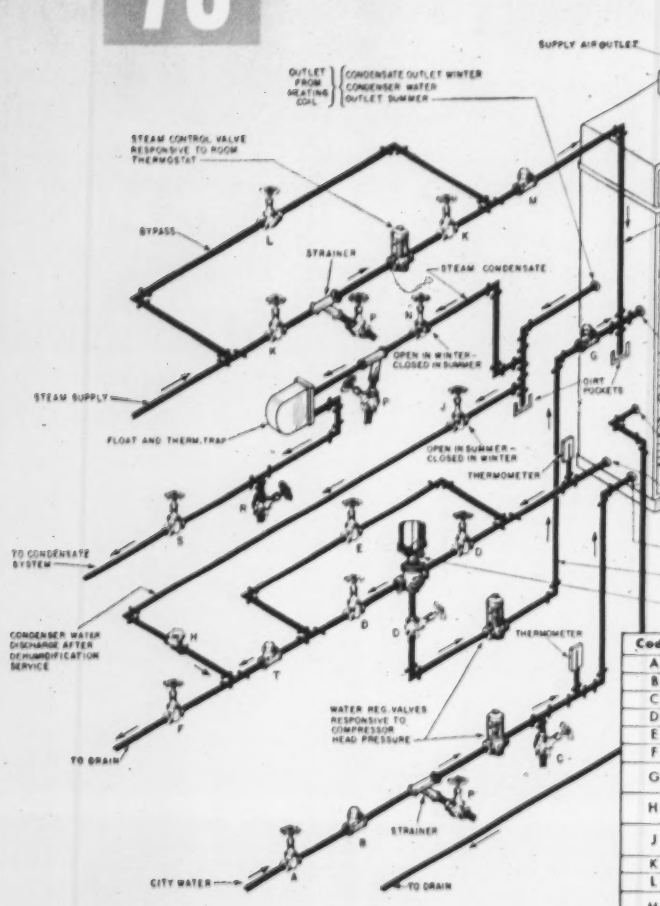

Diagram by Huxley Madeheim
Consulting Engineer
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VALVE RECOMMENDATIONS
For details of valves to suit varying conditions see Jenkins Catalog 56

Code	Qty.	Jenkins Valve	Service
A	1	Fig. 370 Br. Gate	City Water Shutoff
B	1	Fig. 92-A Br. Sw. Check	Prevent Contam. City Water
C	1	Fig. 106-A Br. Globe	Drain Water System
D	3	Fig. 370 Br. Gate	Shutoff Control Valve
E	1	Fig. 370 Br. Gate	Bypass Control Valve
F	1	Fig. 370 Br. Gate	Shutoff Drain Line
G	1	Fig. 92-A Br. Sw. Check	Prevent Stm. Flow To Water Line
H	1	Fig. 117-A Br. Lift Check	Prevent Backflow Thru Htg. Coil
J	1	Fig. 47-U Br. Gate	Prevent Stm. Flow To Drain
K	2	Fig. 370 Br. Gate	Shutoff Control Valve
L	1	Fig. 106-A Br. Globe	Bypass Control Valve
M	1	Fig. 92-A Br. Sw. Check	Prevent Water Flow To Stm. Line
N	1	Fig. 47-U Br. Gate	Shutoff Water To Cond. Syst.
P	4	Fig. 106-A Br. Globe	Strainer Blowoff
R	1	Fig. 106-A Br. Globe	Trap Test
S	1	Fig. 370 Br. Gate	Shutoff Condensate Flow

How to plan piping connections for an all-year
SELF-CONTAINED AIR CONDITIONING UNIT

A *factory-built "package"*, the self-contained air conditioning unit shown in this layout is designed for both summer cooling and winter heating. In this particular system, it is assumed that steam is available for winter heating, and that the condenser is served by the city water supply. The condenser water discharge is used for the reheat necessary for humidity control.

The hookup for humidity control, particularly important for installations such as in night clubs, auditoriums, and others having a high moisture removal load, is shown in the diagram.

During the winter season, the heat output is regulated by a modulating steam valve which operates in response to a room thermostat. In the summer, another room thermostat starts the compressor when cooling is required, and the two-position water control valve, located as shown in the diagram, permits the water to flow to the drain.

When dehumidification is required without cooling, a room humidistat keeps the compressor in operation, but changes the position of the two-position water control valve so that the condenser discharge flows to the heating coil.

Two water-regulating valves are employed as illustrated. One, in the city water line, is set in the usual manner to maintain a predetermined head pressure on the compressor by varying the amount of water flowing into the condenser. The second, in the line from the condenser to the heating coil, is set for a head pressure higher than the pressure on the feed control valve.

This secondary condenser water control reduces cooling capacity and, at the same time, provides hotter water for reheat in the heating coil, thus serving to maintain proper relative humidity without excessive reduction of temperature. The amount of reheat obtained is approximately equal to the cooling provided by the unit, so that the net effect is that of dehumidification only, without cooling.

Consultation with accredited piping engineers and contractors is recommended when planning any piping system.

Enlarged diagram and full description of this layout free on request. Ask for Layout No. 78. Jenkins Bros., 100 Park Ave., New York 17.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

BUILDING TRADE PROMOTION—William A. Landers, president of the National Association of Plumbing Contractors, has invited the plumbers and pipefitters union to join his group and the Heating and Air Conditioning Contractors Association in a program to review tools, materials and methods to cut costs and increase productivity. The program would be tied in with an expanded sales effort by the contractors. Speaking at the union's 1956 convention (page 114), he was suggesting a type of labor-management cooperation which is already being carried on by contractors and unions in the plastering and masonry trades to cope with the onslaught of competing materials. Design changes in the Air Force Academy in favor of masonry have been attributed, at least in part, to such efforts.

PREVAILING WAGES—The California State Federation of Labor at its 54th Annual Convention last week passed a resolution calling for inclusion of fringe benefits in the determination of prevailing wages under the state's Public Works Act. The proposal, which will be presented to the next session of the state legislature, is in line with the recently amended New York law and follows, on the national level, the Davis-Bacon modernization proposal advanced by the AFL-CIO Building and Construction Trades Department. It would require additional wage payments equal to the health, welfare, pension and other fringe benefits paid to organized workers on private construction jobs in the area.

FURNITURE MAKERS BEWARE!—Built-in concrete tables, bedsteads and closets will be a feature of 5,000 housing units to be erected in Buenos Aires under the Argentine government's emergency housing program. The concrete "furniture" has been designed into the bedrooms to make economical use of space and to cut down furnishing costs. Occupants will come from a fluctuating population of some 20,000 now living in so-called "misery towns," but settlements in and around the city, and their rent will be limited to 10% of their income.

SEWER SNATCHERS—In Memphis, Tenn., the ringing echo of sledge hammers on iron shortly before dawn drew a couple of curious policemen—who found three men stealing a sewer. The cast iron storm sewer at the foot of Wisconsin St. empties into the Mississippi River. The trio, who were charged with larceny, were breaking up the sewer to sell as junk. "They did $600 to $800 worth of damage," said Will Fowler, City Engineer. "But, the last time thieves went after this sewer they did $1,400 worth of damage and were not caught."

In 11 years, 7½ million tons were hauled—at less than ½¢ per ton!

A large Southern cement company decided in 1942 to install a conveyor belt system to carry Portland cement rock (90 lbs. cu. ft.). This material had previously been carried by trucks over a 2¼ mile road at a cost of over 8¢ a ton. After 5 years of operation, the belt system had paid for itself, besides keeping the plant running without worrying about gas and tires for trucks throughout the war. Estimated cost per ton was less than ½¢!

The United States Rubber Company belts were used as follows:

- **Primary Crusher Belt (U. S. Matchless®)**
- **Secondary Crusher Belt (U. S. Giant®)**
- **Seven other "U. S." Belts, ranging from 929 feet to 2399 feet, from Surge Bin to plant**

These belts ran an average of 40 hours to 84 hours a week, year after year.

Belts nos. 1 and 2 from Surge Bin were removed after 8 years. The other Surge Bin belts were replaced after 11 years and 1 month's service, and over 3000 feet sold to various sand and brick plants at $1.50 per foot. These belts were replaced by new "U. S." belts.

"U. S." Three-Way Engineering is responsible for such a remarkable performance. "U. S." belt engineers worked closely with the designers of the conveyor equipment and the engineers of the cement company. The result, as always, is the most efficient and economical belt for the job. That is why cost-minded plant operators call on "U. S." engineering and conveyor belt experience to solve any materials-handling problem. U. S. Conveyor Belting is obtainable through any of the 27 "U. S." District Sales Offices. Or write us at Rockefeller Center, New York 20, N. Y.

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WASHINGTON OBSERVER

The housing industry is going to have to live with tight credit for some time. (See page 105.) Fears in the Administration that the country, generally, is poised for an inflation run are more widespread. The policy is aimed at putting a tighter squeeze on money, rather than to loosen credit to aid soft spots in the economy.

Housing is the softest spot among general economic indicators. Starts are still in a slump, and builders complain they won't turn up until mortgage money is more available and down payment requirements are eased. But the Administration holds fast to the theory that if housing were given a credit boost, there would be no anchor against a spiral of inflation. So the Federal Reserve Board is moving to restrict money supplies by raising the interest rate on money banks borrow from the Fed. Commercial banks will be first hit.

Still a chance: Reducing down payments the 2% they were increased last year. But builders see little relief with that move, alone.

•

Democrats will hit the GOP prosperity as only inflation—that few benefit from. The Democratic platform calls for easier money policies—to provide home buyers, farmers, and small businessmen with lower cost credit. The Republicans will defend on grounds of stability and controlled growth.

•

A running fight against the huge new military rental housing program is guaranteed by the contractors building homes for sale. An estimated $2-billion of rental housing at military bases for service personnel—totaling 150,000 units—is authorized. Bid openings at such locations as Ft. Bliss, Texas, and White Sands, New Mexico, have been held up already.

Military officials are sure the program won't be stymied. They've already gotten approval from the Congressional committees of several non controversial projects. They expect final clearance shortly of around 70,000 units—almost half the program.

•

Use of power revenues to pay off the irrigation part of hydro-projects yet to be built in the West has gotten its most outspoken support from the top-most Administration spokesman in the field—Interior Secretary Fred Seaton.

Power will be "the paying partner of reclamation" in the future, Seaton said, even more than in the past. Seaton cited Colorado's $160 million Big Thompson irrigation project—at the "completion celebration" as one that couldn't have been built if income from power could not have been used to pay irrigation costs.

Seaton noted two other projects where subsidy of irrigation by power income makes it possible for the engineers to show that the federal investment will be paid off by the users. Unless this kind of power-irrigation bookkeeping is used neither the Missouri River nor the huge new Upper Colorado projects could be economically justified.

•

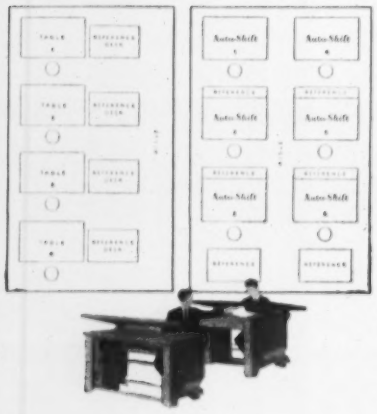
Idaho Power Co. has put up a $3-million bond on Hells Canyon. It is the result of a legal maneuver won by the bloc trying to stop the company's building of two low dams and get a single, federally built high dam instead.

Supreme Court Justice Black refused to stop further work at the site until their court case is finally settled, as the high-dam people asked, but Black required the $3-million bond against the company's seeking to recover its cost from the government if it should turn out that the license it holds from FPC should be nullified by the courts.

ONLY *LOW COST* WAY TO ENLARGE YOUR ENGINEERING DEPARTMENT

You can enlarge your engineering department in two different ways. With time-consuming, costly new construction, averaging $25-per-square-foot or $1500-per-draftsman. Or, by installing Auto-Shift drafting tables that put *more draftsmen* to work, *more productively*, in your existing space. Installed in rows, Auto-Shifts provide reference and storage space directly *behind* each draftsman (see diagram). Each 250 square feet accommodates *two more* Auto-Shifts than conventional tables and desks.

What's more, the man at the Auto-Shift gets *more work* done. Two finger-tip controls adjust board height and slope so easily that working position can be frequently changed, fatigue avoided. In installation after installation, Auto-Shift users report that increased quantity and quality of work quickly repay initial cost. Why not get all the interesting facts about Auto-Shift tables. Simply write Auto-Shift, Hamilton Manufacturing Company, Two Rivers, Wisconsin.



In about 250 square feet—4 men work at conventional tables and desks—6 men work, better and faster, at Auto-Shift tables.

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DRAFTING EQUIPMENT

HAMILTON MANUFACTURING COMPANY • TWO RIVERS, WISCONSIN

• President Eisenhower, concerned about growing rift over Canada's plan to divert Columbia River waters, agrees with . . .

• Canadian Prime Minister St. Laurent to conduct high level diplomatic discussions in an effort to head off an . . .

Impasse Over Columbia River Power

Howard Jacoby
Associate Editor

The dispute between the United States and Canada over Columbia River water power is coming to a head with each side never before so far apart—and on a question that is exceedingly complex, devoid of ready solution and which involves vast amounts of electrical energy.

The issue has been two years in forming, since Canadian spokesmen began talking about possible diversions of Kootenai River waters into the Columbia and Columbia River waters into the Fraser River basin. Most interested persons in the United States were convinced—and still are—that this talk was a "diversionary tactic" to achieve a better bargaining position over compensation for water stored in the Canadian portion of the Columbia River that would serve U. S. powerhouses downstream. They were aware that Canada had never investigated fully her water resource potential in Columbia and Fraser basins.

• **Must divert**—But early this month, Gen. A. G. L. McNaughton, chairman of the Canadian section of the International Joint Commission and chief architect of Canadian water resource development, stated to ENR that Canada has now completed engineering studies which show not only that diversion into the Fraser system, when needed about 25 years from now, is technically and economically feasible but that under no circumstances can Canada afford not to divert eventually. General McNaughton indicated that the figures will soon be made public, at the same time explaining that previous reports of Canada's dropping its diversion plans (ENR July 5, p. 19) were in error.

This firmer-than-ever stand by Canada is expected to bring U. S. adherents up short. The U. S. attitude, as reflected in statements by Len Jordan, chairman of the U. S. section of the International Joint Commission, the joint U. S.-Canadian body charged with resolving boundary water problems, is that even though legal, a diversion by Canada would not be in keeping with the intent of the Boundary Treaty of 1909 and would seriously injure planned U. S. installations downstream.

Canada can be expected to take her strong stand in high level diplomatic discussions between the two countries that are anticipated this fall. The scope of these meetings, which were suggested by Canadian Prime Minister St. Laurent to President Eisen-

. . . Columbia power: chief spokesmen and the area involved

FOR U. S.—Len Jordan

MAJOR DAMS, existing and planned, that are involved in Canadian diversion plan.

hower at their White Sulphur Springs meeting last April, is not clear-cut yet, but if the issue is not squarely joined there, the regular semi-annual meeting of the International Joint Commission in October will probably mark the start of bargaining.

• Canadian Plan

The Columbia River is 1,207 mi long, rising in Columbia Lake in southwest British Columbia and flowing for 465 mi through a drop of 1,360 ft to the international border. In the U. S., the Columbia flows from El 1292 to the Pacific Ocean. Of a total 259,000 sq mi of drainage area in the Columbia River basin, 39,500 sq mi lies north of the border; Canada contributes about 27% of the flow, or 50 maf of the 186 maf that reaches the Pacific Ocean in an average year. The basin's maximum power potential is about 32 billion kwh, but only two-thirds of this appears economically feasible at this time.

Canada's long range plan to develop her water resources, documented by General McNaughton at the World Power Conference in Vienna during June, envisages diverting 5,000 cfs or 3.4 million acre-ft (maf) annually, from the Kootenai River (average annual flow at proposed Libby Dam 10 maf) at Canal Flats by means of dams of equal height at Bull River on the Kootenai and at Luxor on the Columbia. There is an additional possibility of diverting another 3,000 cfs from the Kootenai by pumping water to be stored by a dam at Dorr into the Luxor-Bull River reservoir.

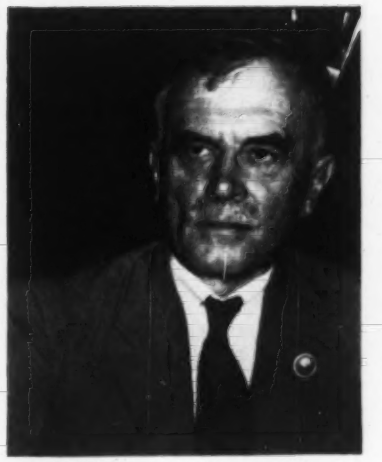
The waters from this reservoir, after use through power plants at Luxor and Donald Canyon, would flow into Mica Creek reservoir, which would have a usable capacity of 11.8 maf. Mica would store flood waters that presently overflow spillways at U. S. dams. Regulated releases from Mica would flow through a run-of-river plant at the Canadian Priest Rapids site and then into the pool behind Little Dalles dam. A 17-mi gravity tunnel from this reservoir would connect to the South Thompson. Thompson and Fraser Rivers, and carry a total of 15 maf yearly, released during low flow periods. At this time, Canada estimates conservatively that of 1,610 ft of head available on these three rivers, about 1,000 ft can be developed for power. Canadian power load studies indicate diversions no later than 1980.

• **Why imperative**—As explained to ENR, the diversion is imperative because without additional water to supplement low natural flows, development of the Thompson-Fraser system is not economically feasible (see hydrographs). A maximum of only 3.6 maf of storage is developable on the Thompson, much of this at high cost.

There are, however, storage possibilities on the upper Fraser River, above its confluence with the Thompson at Lytton, to the extent of 16 maf, according to recent surveys. But, says General McNaughton, several factors augur against their use to increase minimum flows downstream. First, the Fraser is a salmon spawning stream, and high head dams would seriously interfere with this $15-million a year industry in which the U. S. has a stake by virtue of the Sockeye Salmon Fisheries Treaty of 1930. General McNaughton points out that Columbia River waters would be diverted only during low flow season on the Fraser, while salmon migrations both up and downstream occur only during natural high water seasons only and so would not be appreciably affected by the diversions and construction of relatively low head dams on the lower Fraser.

Second, development of storage on the upper Fraser would still leave the Thompson and South Thompson Rivers undevelopable. Finally, and perhaps most important in the long run, Canadian engineers have spotted what they term "magnificent diversion possibilities" involving tributaries to the upper Fraser and rivers to the west emptying to the sea in northwest British Columbia. Several individual hydro installations utilizing heads up to 1,100 ft are envisaged, producing power for metallurgical industries.

All told, Canada contemplates eventual hydro installations on the Columbia and Fraser systems of 12 million kw capacity at a cost of roughly $4 billion. Yearly generation would



FOR CANADA—A. G. L. McNaughton

approximate 72 billion kwh. On the Thompson-Fraser system alone, installation of 6.5 million kw is foreseen.

Existing hydro capacity in British Columbia totals 1.8 million kw, and on the rivers in question 456,000 kw. Power consumption in the province doubled from 3.3 billion kwh in 1946 to 6.4 billion kwh in 1954, and the future rise will be at an even faster rate. Thus, Canada sees the day when it will need the relatively huge blocks of power contemplated in the diversion scheme. And Canadian studies point to this power being available at less than 3 mills per kwh even at the turn of this century. Expressed differently, British Columbia will rely on hydro power for as long as can be foreseen.

• The U. S. Situation

Total installed generating capacity in the Pacific Northwest (Washington, Idaho, most of Oregon and western Montana) at the end of 1955 was 8.2 million kw, of which 7.3 million kw was hydro—just about enough to keep pace with the demand. Another 6 million kw worth of hydro installations are now under construction (about half in existing generator stalls). Of the 1955 capability, about 5 million kw was firm capacity, or assured capacity under critical hydro conditions.

Discounting the diversion possibility, the Corps of Engineers has estimated a probable total development of hydroelectric power in the Northwest of 14 million kw of firm energy (probable nameplate capacity in the order of 20 million kw). Firm load in the region has been projected to 10 million kw by 1965, 17 million kw by 1975 and over 40,000, kw by 2000. Recent forecasts see 2 million kw of steam energy by 1965, 4 million kw by 1975 and over 25 million kw worth of steam or nuclear firm capacity by 2000.

Several factors will speed the end of the hydro era in the Northwest. The wholesale power rate set by the Bonneville Power Administration, marketing agent for power produced by federal plants, is presently $17.50 per kw-year, or slightly more than 2 mills per kwh. While power from the recently constructed plants cost somewhat more than 2 mills, the overall rate is balanced by low-cost power from plants such as at Grand Coulee Dam which were built before the sharp post-war rise in construction costs. Steam power in this region can be generated at 5 mills per kwh if the plant operates continuously, and unit costs are going down even in the face of rising construction costs.

Non-development of many economically advantageous water storage sites is also hastening the crossing of hydro and thermal cost curves. The emphasis in hydro construction, at least on the part of the federal government, is changing from building run-of-river plants providing only pondage to development of water storage sites to capture presently wasted spring floods.

Many storage sites with excellent benefit-to-cost ratios have been passed over because of objections by various local and special interests. Among these are Glacier View, Hells Canyon (Idaho Power Co.'s low-dam scheme provides 1.1 maf less storage than the originally proposed high federal dam), and Nez Perce. Non-prejudiced observers generally agree that many of the objections are not valid considering the overall regional need.

Thus, rapidly rising construction costs and the discarding of some of the most attractive water storage sites has forced the U.S. to an earlier than expected consideration of: (1) less advantageous storage sites in the U.S.; (2) storage in Canadian portions of the Columbia River; and (3) introduction of large blocks of steam and/or nuclear power. The Corps of Engineers is presently conducting studies along these lines and is to complete a revised Columbia River basin "308 Report" by October, 1957.

This then is a brief summary of the U.S. situation as strategy huddles continuous over ways to meet Canadian plans for diversion.

• Background of Dispute

Canada bases her right to divert on the Boundary Treaty of 1909 between the two countries. This treaty created the International Joint Commission composed of three representatives from each nation, to pass upon boundary water problems and set up a principle for dealing with waters flowing across the boundary, which is unique among treaties relating to international rivers. At the insistence of the United States, Article II of the 1909 treaty was adopted, which reserves to the U. S. and Canada ". . . the exclusive jurisdiction and control over the use and diversion, whether temporary or permanent, of all waters on its own side of the line which in their natural channels would flow across the boundary . . . but it is agreed that any . . . diversion from their natural channel of such waters . . . resulting in any injury on the other side of the boundary, shall . . . entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion . . . occurs . . ."

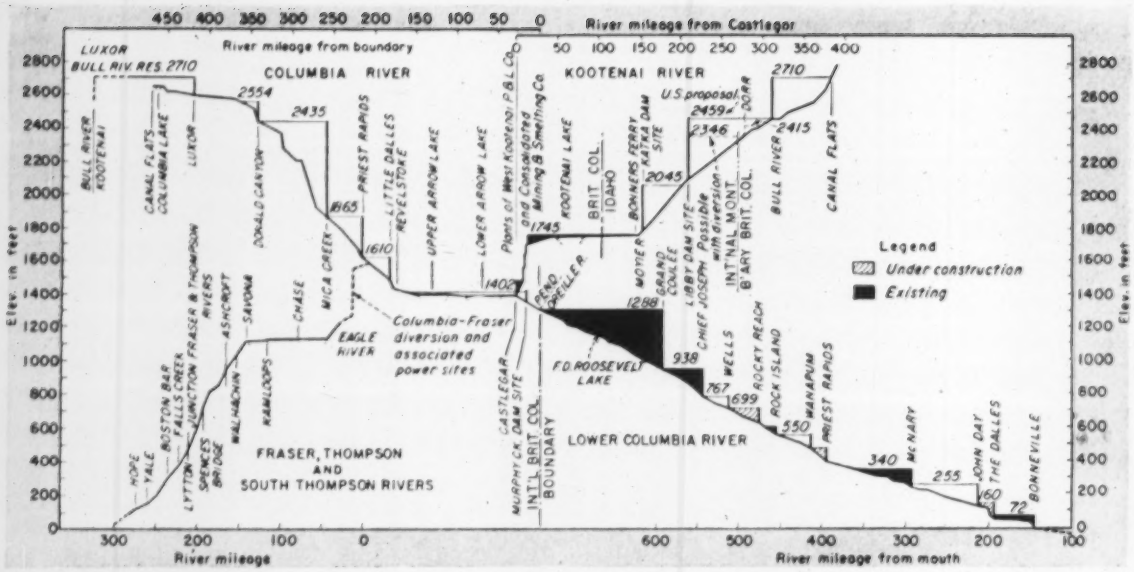
The Canadians had desired to substitute a provision based on an apportionment of benefits, such as is in the great mass of European and other international river treaties.

Canada feels that Article II of the treaty has, in the past, worked to the advantage of the United States but that now the shoe is on the other foot. However, the United States has never actually diverted a boundary-crossing stream since the treaty signing although in the 1860's it did divert the Allegash River in Maine with no consideration of Canada.

• **Earlier stands**—A long-standing unresolved case before the International Joint Commission provides an interesting comparison with the Columbia River problem. In 1945, residents of Montana became concerned over the disposition of 360,000 acre-ft of water flowing into Canada in the Waterton and Belly Rivers. Canada was contemplating using the entire flow of these rivers in her planned St. Mary River basin irrigation development. Montana interests felt that the U.S. water might be claimed forever by Canada unless there was some mutually agreed upon apportionment of the U.S. flows.

Some interested groups in the U.S. cried out for the U.S. to divert all Waterton-Belly waters before they reached Canada, but the internationally minded prevailed in the official U.S. position before IJC: Canada could have some water and some compensation for the loss of water diverted to meet future U.S. irrigation needs.

Formal contact between the U. S. and Canada over the Columbia River problem began with a reference to IJC in 1944 to report on possible development. In 1948 a joint board of U. S. and Canadian engineers advised IJC that Libby Dam, which would back water into Canada a distance of 42 mi, was a desirable development. The



CANADIAN DIVERSION of 15 maf will make economically feasible development of Thompson-Fraser system.

U. S. formally applied to IJC in 1951 for approval of Libby which had been authorized by Congress, then withdrew the application in 1953 to permit certain modifications demanded by local U. S. interests, and finally resubmitted the application in May 1954. At this time Canada objected to Libby because they had become aware of the diversion possibilities and wished time to investigate. In April 1955, General McNaughton outlined Canada's diversion plans and then offered to discuss the temporary use by the U. S. of regulated flow from the proposed Mica Dam until diversion.

At the October, 1955 semi-annual meeting of IJC, U.S. Chairman Len Jordan stated that the U.S. was unwilling to discuss Canada's proposal because it would imply U.S. acceptance of a conclusion that the diversion would cause no injury to her downstream interests.

• **Diplomats step in**—Then followed a period marked by many exaggerated and even belligerent statements by various interested parties in Washington and Ottawa, the Pacific Northwest and British Columbia. The clamor grew so loud on both sides of the border that apparently Canadian Prime Minister St. Laurent felt the need for high level diplomatic discussions, and made this suggestion to President Eisenhower.

• Canadian, U. S. Strategy

The present position of Canadian legal experts on the Columbia River diversion is that: (1) Canada's right to divert is absolute, and (2) it is highly unlikely that the U. S. government or a private U.S. interest could obtain compensation for an injury to either existing or planned installations suffered from a diversion since the issue, according to Article II of the treaty, would be settled on the basis of British Columbia water law. This law recognizes only rights conferred by license from the B. C. government.

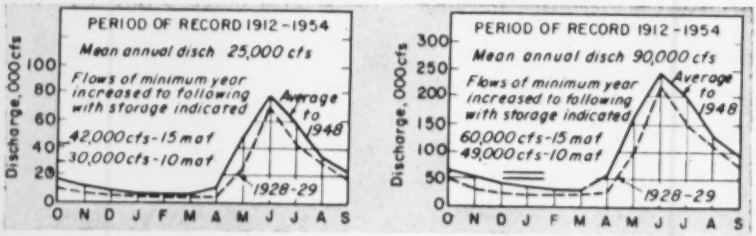
Judging from recent statements by top Canadian officials, Canada will probably recognize an obligation to provide sufficient flows for maximum operation at Grand Coulee Dam. General McNaughton has testified that the 15-maf diversion would permit sufficient water to reach Grand Coulee in all but the lowest flow years.

The current U.S. legal position is that Canada can divert such water as it wishes, but must reckon with substantial injury to U.S. installations that actually exist at the time of the diversion—a softening of previous statements that U. S. has plans for the entire flow of the Columbia River and that injuries to ultimate developments must be compensated for.

Canada approaches the bargaining table with a need to begin development of 2 million kw within the next two or three years to meet anticipated power requirements in British Columbia. Hydro capacities of this magnitude are available only from the Columbia-Fraser systems. Mica Creek Dam is the logical starting point since it provides water to make all other down-stream installations feasible.

• **Mica Creek economics**—Detailed preliminary plans have been prepared for Mica indicating an expenditure of $247 million for 11.8 maf of usable storage at 35% drawdown and 1.1 million kw installed (1,320,000 kw ultimately). Based on a 70% annual load factor and a 400-mi transmission distance to the Vancouver area, Mica Creek power at the outset would cost in the neighborhood of 4 mills per kwh. Later, as downstream plants on the Columbia and Thompson-Fraser were built, Mica would become very attractive financially.

Thus, Canada is anxious to have the U.S. take up her offer to use Mica waters until the diversion, since payments by downstream plants for water released during low flows would make Mica a 2-mill installation from the beginning. Incidentally, Canadians have been asking reimbursement at the going rate of steam power for


PERIOD OF RECORD 1912-1954
Mean annual disch 25,000 cfs
Flows of minimum year increased to following with storage indicated
42,000 cfs-15 maf
30,000 cfs-10 maf
Average to 1948
1928-29
Discharge, 000 cfs
O N D J F M A M J J A S
PERIOD OF RECORD 1912-1954
Mean annual disch 90,000 cfs
Flows of minimum year increased to following with storage indicated
60,000 cfs-15 maf
49,000 cfs-10 maf
Average to 1948
1928-29
Discharge, 000 cfs
O N D J F M A M J J A S

HYDROGRAPHS show effect of diversions during minimum flow periods on Thompson River at Spences Bridge (left) and on Fraser River at Hope (right).

peaking (7 mills), but would probably settle for a rate much closer to the present hydro cost.

Messrs. Jordan, Eugene Weber and Roger McWhorter of the U.S. section of IJC are now busily preparing the U.S. position. Evaluating the effect of the proposed 15-maf (20,500 cfs) diversion is a problem complicated by (1) uncertainty that the diversion could be accomplished as Canada says by just skimming off flood flows at times they overflow U.S. dams; (2) the question of what stage of U.S. development to base calculations upon; (3) the possibility of an early turn to steam and nuclear power; and (4) the difficulty of ascertaining load factors at the time of diversion.

However, completion of presently planned upstream storage in the U.S. would allow the harnessing of some of the 15 maf and so at that stage the U.S. would probably suffer materially from the diversion. But the diversion would cause relatively little injury to installations that exist or are under construction. If all the 15 maf could be harnessed to flow through the 1,200 ft of head soon to be developed on the U.S. main stem of the Columbia, it would generate an additional 14 billion kwh annually.

What rankles U.S. adherents is that they had planned in good faith on utilizing the full flow of the Columbia. Canada answers that, after all, 15 maf out of the 50 maf it contributes is not an unreasonable apportionment. A non-partisan gets the impression that if Canada had made known its intent to divert, say 20 years ago, the U.S. might have accepted it as reasonable and could have planned accordingly.

• **U.S. approaches**—One approach being considered by U.S. officials is for each country to proceed with its resource development and then if and when Canada finally does divert, base the compensation due the U.S. on injuries as measured by comparing the effect the day after diversion with the day before. However, such a plan would mean chaotic development, with each country scrambling to build dams in a hurry. It is not likely to be pushed except as a bargaining point.

A more likely plan, from the U.S. view, is for Canada and the U.S. to draw up a development scheme for the entire region, including the Columbia and Fraser basins, which would maximize total benefits regardless of the international boundary. General McNaughton maintains that the Canadian diversion plan does just that and informed U.S. officials agree that some degree of diversion might prove to be justifiable as part of the best plan from an international viewpoint.

For example, if only 1,000 ft out of the 1,600 ft of head available on the Thompson-Fraser system could be developed, the maximum plan might call for diverting only that amount of water from the Columbia which would make economically feasible development of the 1,000 ft of head. Every bit of remaining water would be sent down the Columbia because almost the entire fall of the Columbia can be developed.

In conjunction with the early thermal power possibility in the U.S., the maximization approach could possibly provide a basis for bargaining over timing and extent of diversion. In a combination hydro-thermal system, the thermal power usually operates on base load while hydro capacity meets peaking needs. Such use of hydro requires much less storage—or, as many authorities have put it, the value of water storage is decreasing every day.

• **Flood control aspect**—Early construction of Mica Creek Dam will greatly facilitate the U.S. problem of providing full flood control on the Columbia. At this time, 4.9 maf of flood control storage exists, while a total of 20.9 maf of storage is required. An additional 5.5 maf is slated for early development—Priest Rapids, John Day, Hells Canyon and a modification of gates at Grand Coulee to increase its flood-control usefulness from 1.2 maf to 4.2 maf. Unfortunately, because of limited hydraulic capacity which allows storage of large volumes of early flood runoff but produces a sharp crest in later flood stages, use of Grand Coulee for flood control depends upon substantial storage elsewhere on the main stem. Although Priest Rapids and John Day Dams were originally planned with a total 4 maf of storage, current approved plan provides for only 1 maf of flood storage.

Lt. Gen. Samuel D. Sturgis, Jr.

Maj. Gen. Emerson C. Itschner

The Corps Gets a New Chief

In a surprise announcement that came more promptly than expected, President Eisenhower Aug. 10 appointed Maj. Gen. Emerson C. Itschner to take over as Chief of Engineers, U.S. Army, effective Oct. 1.

To speed the changeover in top command, Lt. Gen. Samuel D. Sturgis, Jr., present Chief of Engineers, had asked for early retirement, several months short of the four years that he might have served. Sturgis is completing his recovery from an operation, and he wanted the new chief to take over the top job as soon as possible in the current fiscal year.

Itschner, who has been Assistant Chief of Engineers for Civil Works since March 1954, will serve under a recess appointment until confirmed by the Senate after the new Congress convenes. Confirmation is regarded as a formality. The new Chief of Engineers stands high in the estimation of the legislators.

Only 53 years old, Itschner is the youngest officer to be appointed Chief of Engineers in nearly 120 years. An Army Engineer career that began with his graduation from the U.S. Military Academy in 1924 has given him a broad background of experience.

As Chief of Engineers, Itschner will head both a combat army and a technical branch with a present peacetime strength of 10,000 officers, 100,000 enlisted men and 50,000 civilians. Military and civil works construction calling for expenditures of more than

(Continued on page 26)

$2 billion a year are only part of Corps activities that include also training, schooling, map-making, management, maintenance, research and development programs.

Early in World War II, Itschner was put in charge of the huge Air Force construction program for the Chief of Engineers. Later, he directed heavy construction for the armies invading Northern France, as engineer of the Advance Section Communications Zone in Europe. After VE Day, he went to the Philippines.

At the end of the war, Itschner moved to Washington for three years as chief of the Military Construction Operations Division in the Office of the Chief of Engineers. Following that service, he was District Engineer at Seattle in 1949 and 1950.

When Korean hostilities broke out, Itschner was named engineer of the First Corps in September 1950. He served 14 months in Korea during the rapid advance to the Yalu River and subsequent withdrawal. While the troops were pulling back, he took charge of demolishing military installations in the North and South Korean capitals.

In April 1952, Itschner became North Pacific Division Engineer at Portland, Ore., in charge of civil and military construction for the Corps in the Northwest and Alaska. He left that post at the end of two years to take up his present duties in Washington.

Sturgis made his decision to ask for early retirement entirely on his own. Rumors of complaints from some sources that he had not promoted new flood-control and rivers and harbors project as aggressively as some of his predecessors certainly had no influence in the decision.

Since becoming Chief of Engineers on Dec. 1, 1952, Sturgis has worked hard and successfully to build up the capability and prestige of the Corps. Under his leadership, the Army Engineers have strengthened their reputation and standing before Congress and inside the executive branch. As a result of Sturgis' efforts, the position of the Corps on water resources and other legislative-technical questions carries more weight with Congressional committees and in executive studies that have been set up by the White House.

Darkness Complicates Tricky Job

One of the most ticklish operations in the complex approach system for the third tube of the Lincoln Tunnel was one-fourth completed, when this 95-ft, 36-ton girder was turned loose by the stiff-leg derrick at 5:30 a.m., Sunday, Aug. 12. The girder, the first of four to be installed 40 ft above the mainline approach to the Pennsylvania Railroad Station in midtown New York City, had to be connected during slack hours because of possible danger to power catenaries.

Placement operations were started at 3:50 a.m., after waiting passage of a southbound sleeper. Two girders were connected that morning and two more have been installed since, during other periods of minimum rail traffic on the line.

The Lion's Share?

NYC set for $142-million sewerage push, hopes for big share of federal aid

New York City will launch into Stage 2 of its pollution control program next year. Design and construction will start on $142 million worth of sewage treatment plants. The total dollar volume of Stage 2 will eventually add $225 million to the $160 million worth of work reported virtually completed under Stage I of the program.

In making this announcement, the city's Department of Public Works made clear its desire to take until 1964 to wind up this mammoth $325-million program. The Interstate Sanitation Commission has specified that the job be done by 1959; the city awaits response to a request for extension of this deadline for another five years.

• **Big plants**—Largest single plant in the work ahead—and in the entire program—is the $80-million Newtown Creek plant, on which construction is due to start next year. This 310-mgd plant is planned to treat sewage flowing from parts of three boroughs—Manhattan, Brooklyn and Queens. Its operation will clean up non-recreational waters of the East River as well as the tidal Newtown Creek.

A second major plant, on which design will begin next year, is 220-mgd North River project, a $32-million works for which a site will have to be built along the city's shore of the Hudson (locally known as North) River (for map of entire program see ENR Feb. 16, p. 188).

• **But with federal aid?**—Significantly, the Public Works Department announcement of its plans for next year indicated that it looks for $1.25 million in federal aid as its share of New York State's $2.7-million allocation of funds authorized under the new federal water pollution control law (ENR July 5, p. 28). However, this hoped-for $1.25 million was arrived at by figuring the $250,000 maximum per project for each of the five projects scheduled for next year.

What was not taken into account is another stipulation of the law, which says half of the aid must go to cities of 125,000 population or less. This puts New York in the position of wanting $1.25 million of about $1.4 million that might conceivably be available after the smaller cities had their share. And there are five other "big cities" in the state that must be considered in the allocation of aid.

Norfolk Renovation

City gets new master plan to guide improvements in traffic flow and parking

A $10-million master plan has been developed that would renovate the central business and financial district of Norfolk, Va., over a 5 to 10 year period.

Charles K. Agle, a Princeton, N. J., consulting engineer, prepared the plan in cooperation with the Norfolk Planning Commission and the city's Redevelopment and Housing Authority.

Principal features:

- Construction of two 100-ft-wide freeways to serve the downtown area.
- Widening of certain streets in the congested downtown district.
- Location of a new civic center in a generally-blighted waterfront area, near the Norfolk terminal of the Norfolk-Portsmouth Bridge tunnel.
- A city-wide parking plan.
- Expansion of retail space on City Hall Ave.
- Expansion of commercial, office and financial space along Main St.
- Creation of a park in a now-blighted area from the east end of Tazewell St. to St. Paul's Church.
- Construction of a new intercity bus terminal.
- Creation of a parking authority.

Although total cost of the downtown renovation is estimated at $10 million, federal and state aid for roadwork involved, and federal funds for urban renewal could reduce the actual city outlay to $3 million.

Seattle Will Reclaim Land For New Industrial Area

The Seattle Port Commission has retained consulting engineers to make a detailed engineering survey of the first unit of the proposed $15 million Duwamish Waterway Industrial District. The unit would cover 600 acres.

An earlier survey had established the feasibility of filling low land and straightening a 4.5 mi stretch of Duwamish Waterway to eliminate danger of recurring floods that now plague the area.

The New York firm of Tippets-Abbet-McCarthy-Stratton, which made the feasibility study, will follow up with the survey to determine the amount of industrial land that can be reclaimed. It's work will include preparation of drawings indicating recommended locations for building and for streets, rail connections and utilities.

The project will require a November vote on an $8 million bond issue and a two-mill tax levy.

Huge 450-ft Ore Handling Bridge . . .

. . . Loses a Bout With Heavy Winds

The collapse of a giant iron-ore handling bridge near Cleveland, Ohio, on July 27 has been attributed after investigation to excessively high winds —possibly a tornado. The Erie Railroad Co., owner of the bridge, this week ruled out possibility of a structural defect.

Witnesses near the structure at the time had estimated winds at 80 to 85 mph, and some claimed seeing a tell-tale tornado spout. Two men were injured in the mishap.

The bridge is deemed a total loss by engineers.

The railroad has not yet decided whether to replace the 46-year-old structure at a cost estimated to exceed $1 million. The huge steel Pratt truss was 450 ft long and cantilevered 136 ft at one end. Height from the ground to its lowest point was 79 ft. Moving along its length was a traveling bucket, which could handle up to 10 tons of ore.

The bridge had been equipped with a wind-velocity warning siren, set to go off when winds reached 50 mph. Electrically operated power clamps were then used to secure the legs. But this time there had been a power failure in the yard at the time the winds got stronger.

Workmen were forced to attempt to tie the bridge legs to the tracks with mechanical clamps.

When the powerful winds struck the men had completed tying down one leg, were about to start on the other, but the winds swept it 78 ft down the track twisting the steel skeleton like a giant toy. One of the workmen injured was in the overhead bucket.

Road Bill in Action

Backlog of authorization enables states to obtain BPR project OK's quickly

State highway departments are moving fast to get interstate projects under design and construction.

In the first five weeks after the new federal highway program became law the states have obtained Bureau of Public Roads approval to complete designs and advertise for bids on 122 miles of highway costing more than $36 million. Within that brief period, too, the states have awarded construction contracts for another 110 miles of previously-approved projects worth some $18 million.

Most of the $36 million in new approvals granted by BPR came out of a backlog of previous authorizations under the old program. States can pull projects rapidly from the pool of approved programs. And—after review and confirmation by BPR under the new law—the federal government will pay 90% on cost instead of smaller amounts provided by earlier acts.

These facts were revealed last week by President Eisenhower when he released the first brief progress report of Commerce Secretary Weeks on the accelerated highway program. Weeks mentioned that Missouri, on Aug. 2, awarded the first contract to use new funds. It was on another Missouri contract, however, that construction first got under way Aug. 9, this involved a 3-mile stretch costing about $1.5 million at St. Charles.

Once a programmed project has been approved by BPR, the state highway department can clear detailed planning, specifications, and contract documents with the Bureau District Engineer assigned to the state. Only where a big bridge or difficult urban location requires additional technical assistance is it necessary for a state to call on regional or headquarters offices for further consultation.

The BPR also is moving ahead on approvals of final locations for interstate routes. So far the agency has approved 13,237 miles, 11,816 of them rural and 1,421 urban. No more than 25% of this has previously been improved to required standards.

These are some programmed projects approved by BPR for construction under the new highway act:

- Alabama, North Birmingham area, three projects, $2.8 million.
- California, San Bernardino area, two projects, $2.6 million.
- Illinois, East St. Louis area, one project, $4 million. La Salle area, two projects, $2.4 million.
- Massachusetts, Boston area, one project, $7.2 million.
- Michigan, Portland area, two projects, $4.6 million.
- Ohio, Cleveland area, two projects, $10.4 million.
- Texas, Dallas area, three projects, $2.3 million; Houston area, two projects, $1.5 million.

Michigan Road Program Passes One More Hurdle

Michigan's $146.3 million highway program—the most ambitious in its history—came closer to the construction stage last week when bond attorneys approved a rewritten proposal to finance part of the work through a $25 million bond issue.

Highway officials hope to get some of the work under contract this year. First roads to be built with 90% federal aid include:

- U. S. 12, the main highway between Detroit and Chicago. Some 41 mi will be constructed from Galesburg to Parma at a cost of $28 million, plus 53 mi from Kalamazoo to Stevenson at a cost of $40.8 million.
- U. S. 16—39 mi will be built from the outskirts of Grand Rapids to State Route 10.
- U. S. 23—some 21 mi will be built from Bridgeport to Kawkawlin for $17.5 million, and 28 more mi from Mackinaw City to Indian River at a cost of $14 million.

At the 50% federal-aid level, Michigan intends to build 22 mi on U. S. 131 from the Kent-Allegan County line to Plainwell at a cost of $14 million, and 13 mi between Leslie and Jackson on U. S. 127 for 7 million.

Kansas Pike Sets Toll Rates for October Opening

The Kansas Turnpike Authority has tentatively set toll rates of 1.7 cents a mile for passenger cars and an average of 3.5 cents a mile for trucks on the 236-mi turnpike, scheduled to be opened to traffic about Oct. 15.

In setting the tentative schedule, the authority divided it into eight classes of vehicles, including passenger cars, passenger cars with trailers, busses, and five categories for trucks, according to weight. Under the schedule, passenger cars will thus pay $3.80 for the entire distance of the pike from Kansas City to the Oklahoma border, busses $7.20, and trucks will pay from $6.30 to $9.

Meanwhile, a construction progress report shows that on July 1, 230 mi of earthwork, 212 of the 254 bridges, and 49.2% of the paving had been completed.

Welded Pool Won't Crack in Quakes

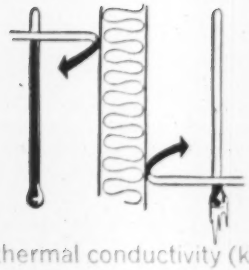
Steel swimming pool design is advanced with the completion of a large welded structure in Oroville, Calif. Swimmers' portion of the pool is 80x75 ft with an 11-ft-deep diving section forming the base of an L-shape. The pool holds 185,000 gal.

Designed by Raphael Sampson of San Francisco, the pool employs ¼ in. steel plate throughout and will be unaffected by earthquake shocks occasionally felt in the area. The all-steel construction makes the pool capable of withstanding freezing temperatures. Design was based on full water pressure and full backfill pressure for the empty-tank condition. Bottom plates are butt welded continuously to channels set in continuous concrete foundations. Longer sides of the pool are knee braced at the midpoint with I-beams extending to 12-in.-wide flanges set in concrete footings. Additional rigidity is obtained from the continuous skimmer which extends around the pool—15 in. wide, it is of ⅜-in. plate.

Water is recirculated from drains spotted on the skimmer at 10-ft centers. The water is filtered, chlorinated and heated and is then returned through side outlets on 15-ft centers. Large drains to pull cold water from the pool are located at the deepest part of the pool.

The 70 tons of steel plate used on the job was supplied by Kaiser Steel Corp. of Oakland, Calif. Contractor was McDonald Steel Co., also of Oakland.

C FULLPAK SCRAPER — A new



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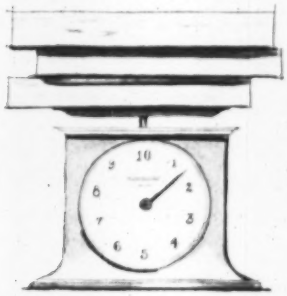

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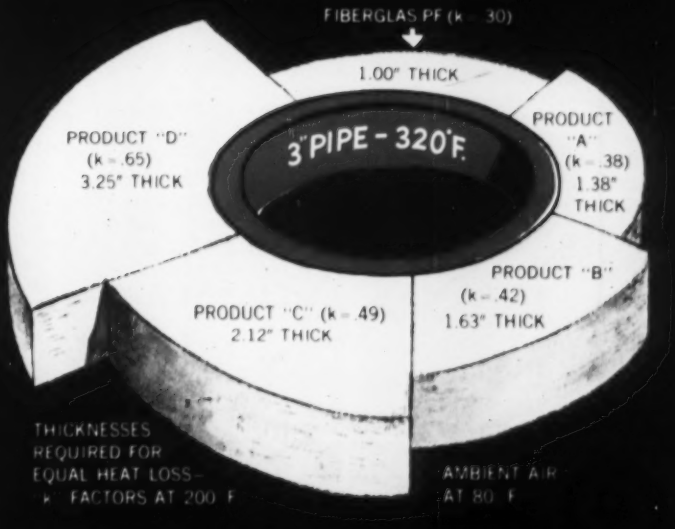

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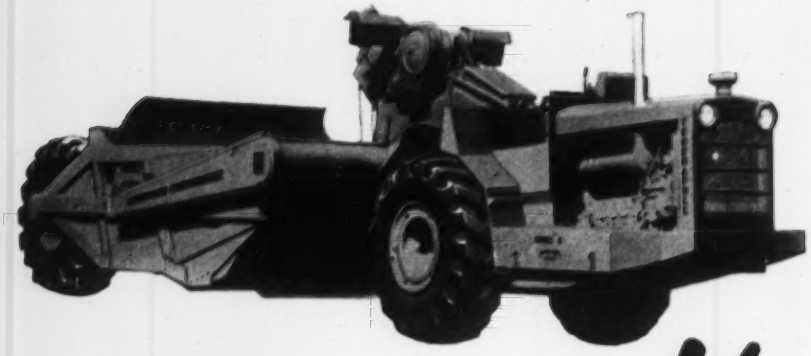


C FULLPAK SCRAPER — A new, improved scraper for the time-tested C Tournapull prime-mover. Lower, wider bowl... boils better...loads faster...fills corners and heaps 18-cu. yd. payloads. Low push-block delivers direct line thrust of pusher to self-sharpening blade for maximum cutting power.

TWIN-C TRACTOR — World's most powerful and fastest push-tractor...gives bigger loads in shorter loading time. 416 hp and 4-wheel drive give 65,900 lbs. "drawbar pull". Rubber-tired speed, power steer, give quick line-up for direct-line push. Twin-C torque-converter speeds match loading speeds of modern rubber-tired scrapers.

New in '56!

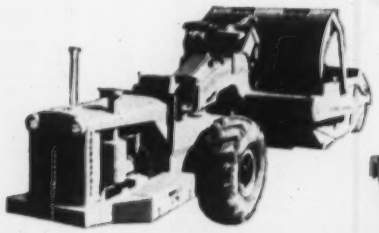
220 ADAMS GRADER — Handles same wide variety of work, within its power and weight range, as the larger Adams machines. 60 hp diesel engine, 9 forward speeds (including 4 optional creeper gears), and simple, efficient hydraulic controls. Operator can swing moldboard to high bank cutting position on either side of grader without leaving his cab position.

Earthmoving today is not what it was a few years ago. Today's jobs run bigger in yardage, include wider areas ...time-limits for job-completion are shorter...labor costs are higher... competition is keener. You should have these conditions in mind when figuring new work. With today's accelerated activity in highway construction, it will pay you *now* to analyze your present equipment in the light of future requirements.

To capitalize on the expanding opportunities ahead, you will need machines that *work* faster...*travel* faster

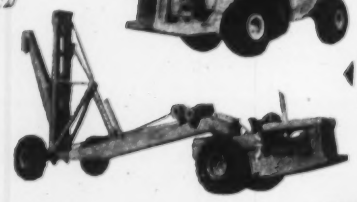
Get bigger production and make more profits with complete line of W equipment

Scrapers and Interchangeable Attachments



3 SCRAPER SIZES
7.5, 18, and 25-cu. yd. heaped capacities. 138, 208, and 293 hp respectively. Tournapull prime-movers interchange with trailing units shown here.

REAR-DUMPS
11, 22, and 35-ton capacities.

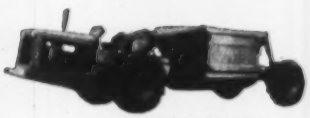


LIFT-AND-CARRY CRANES
10, 20, and 30-ton capacities.

FLAT-BED HAULERS
10, 20-ton capacities.

LOGGING ARCHES
138 and 208 hp models, plus 260 hp unit with rear-wheel electric assist for steep grades.

SIDE-DUMPS
10, 20-ton capacities.

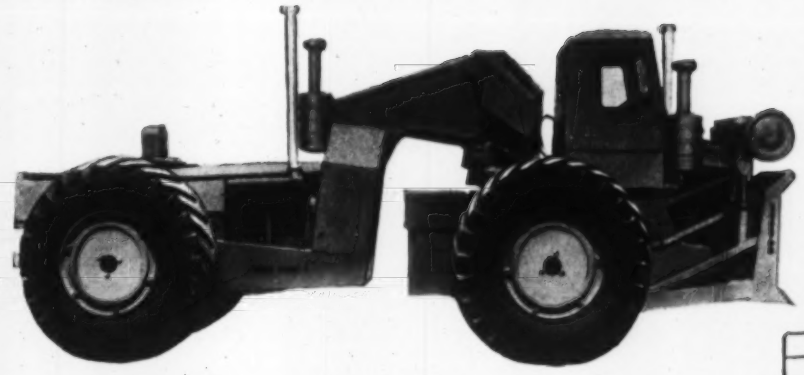


BOTTOM-DUMP
18-ton capacity.

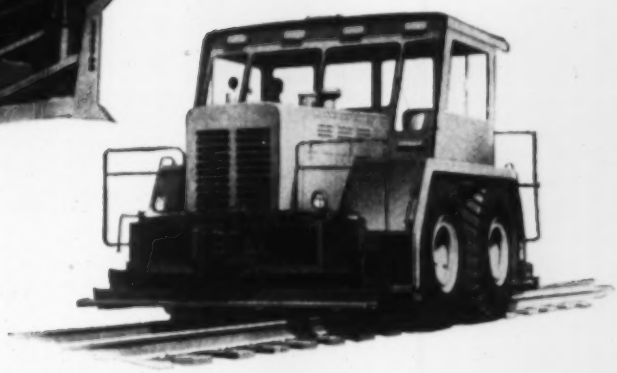
Note: Bulldozer and Snow-Plow available for use with 7.5-yd. D Tournapull.

LeTourneau-Westinghouse also manufactures:
Power-Control-Units, Rooters, Sheepsfoot Rollers, Jib Cranes, and Tournarope from ¼" to 1½" dia.

Tournapull, Tournatractor, Angledozer, Tournarope—Trademark Reg. U.S. Pat. Off.
Adams, Rooter, Fullpak, Twin-C, SwitchMobile, SwitchTractor—Trademark G-1093-G



SWITCHMOBILE — New rubber-tired diesel switcher cuts across tracks, yards, by shortest route...travels by highway...or straddles tracks to pull or push string of cars. 208 hp, weighs 35,640 lbs., outpulls any steel-wheel locomotive near its class.



. . . to help you handle more earthmoving contracts and make bigger profits

. . . and operate at *high mechanical efficiency*. The new 1956 machines pictured here meet these requirements.

For example, the new C Fullpak Scraper, with lower and wider bowl, heaps 18 cu. yds. fast...travels at speeds to 30 mph...saves valuable seconds on load, haul, spread, and return. The seconds it saves mean extra profits for you.

The new Twin-C Tractor...world's most powerful pusher...also warrants your consideration. Its 80,000-lb. 416 hp push helps big scrapers get bigger loads, in less time. It allows you to take advantage of the speed built into today's big modern scrapers...giving more yardage than any other pusher.

Another product, new in '56, is the Adams 220 motor grader. Use this high quality but competitively-priced grader for light grading and clean-up duties, freeing your larger graders for heavy-duty assignments.

Every one of these new dirtmoving tools in the extensive LeTourneau-Westinghouse line reflects years of constant development. All give you new production and profit opportunities well worth investigation.

In planning for your future, isn't it a good idea *now* for you to analyze your equipment needs to meet the new opportunities ahead.

Ask for specifications and pictorial literature on these new units. We'll be glad to arrange for demonstrations on your job, or take you to owners where you may see these machines in action. Write the factory now, or visit your nearby LeTourneau-Westinghouse Distributor.

Tractor and Interchangeable Attachments

TOURNATRACTOR
208 hp, with forward speed to 17 mph. 21.00 x 25 tires standard, with 26.5 x 25 wide-base tires optional, for greater flotation and traction.

BULLDOZER
Angledozer and Root Rake, optional attachments.

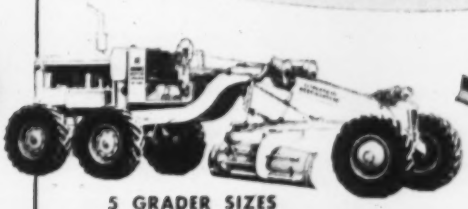
SNOW-PLOW
V-type, with optional wing.

CARRYALL SCRAPERS **PUSH-BLOCK**
16 and 24-yd. heaped capacities. No power-control-unit required. Operate by electric power from plug-in jack on Tournatractor. Sturdy Bumper and Push-Block available.

SWITCHTRACTOR
Rear-end has standard RR coupling and drawbar. Usual front-end tractor attachments.

Note: Logging-Winch, Tree-Pusher, and Root Rake also available for Tournatractor.

Adams Graders and Loaders



5 GRADER SIZES
60, 80, 104, 123, and 150 hp. Four larger sizes have 8 forward speeds to 26 mph, 4 reverse speeds to 13 mph.

SNOW-PLOW AND WING
Available as grader attachments, also "Snow-Blo" attachment for wing.

ELEGRADER
Plows dirt and moves it up conveyor for casting or loading. Attachment for Adams 440, 550, 610, 660 graders, and Cat 12.

V-TYPE SCARIFIER
Heavy-duty with replaceable points.

TRAVELOADER
Self-propelled, belt-type machine for picking up and loading loose material into trucks from windrow or stockpile.

Note: Power-Shift moldboard, Rotary Snow-Plow, and Bulldozer available for Adams graders.

LeTourneau-**WESTINGHOUSE** Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

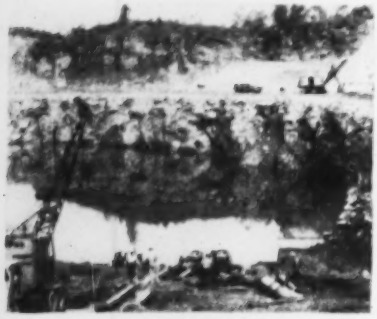
ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

HOW TO HANDLE
WET JOBS

REMOVE 600 MILLION GALLONS FROM FLOODED QUARRY

Alpha Portland Cement Co. plant at Martins Creek, Pa.

HIT BY HURRICANE Diane, Martins Creek leaped its banks and flooded this quarry over 100 ft deep — shown by dotted line in photo.



WATER LOWERED 87 FT—14 ft to go — as Griffin pumps perform dependably and economically in one of the largest dewatering projects ever completed.

Griffin personnel and equipment were rushed, plans set and pumping started — all in 5 days. Quick Griffin service and reliable equipment helped Alpha resume production ahead of schedule.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Ohio Freeway

Engineers are picked for design of eight sections

Engineers have been selected to design eight of the nine sections on Cincinnati and Cincinnati ends of the proposed 500-mile north-south Ohio Freeway.

The Ohio Highway department predicts that the 113.3 miles costing an estimated $122.3 million—will be finished and in use by summer of 1959. The consulting engineers have been asked to complete working plans on the four-lane, limited highway in time to award contracts early next summer.

Engineers named by the highway department proposals ranging from 2.75% to 3.5% of estimated construction cost include:

- Vogt, Ivers, Seaman & Associates, Cincinnati: The north 8.5 miles from Mill Creek Expressway in Cincinnati estimated construction cost: $9 million.
- Dodson, Kinney & Lindblom of Columbus and A. M. Kinney, Inc., Cincinnati: next 14.3 miles. Estimated construction cost: $15.5 million.
- Yule, Stickler, Jordan McNee of Philadelphia: 11.3 miles to old Route 25 at the south edge of Dayton. Estimated construction cost: $10.8 million.
- Howard, Needles, Tammen & Bergendoff, Kansas City, Mo.: 5 miles from Route 8 north of Turnpike No. 1 to the south corporation line of Bedford. Estimated construction cost: $8 million.
- Michael Baker, Jr., Rochester, Pa.: 11 miles from the north corporation limit of Mayfield Heights. Estimated construction cost: $16 million.
- Capitol Engineering Associates, Dillsburg, Pa.; next 19.8 miles. Estimated construction cost: $22 million.
- Charles L. Barber & Associates, Toledo, and Harry Balke, engineers, Cincinnati: 16.1 miles. Estimated construction cost: $16.5 million.
- Shaffer, Parrett & Associates of Mansfield, and Brookhart & Tyo; final 16.3 miles. Estimated construction cost: $14.5 million.

Indiana Opens 80 mi of Pike, Another 50 mi Due on Sept. 17

The eastern 80 miles of Indiana's 156-mi East-West toll road was opened to traffic last week, just two years from the time that construction first got underway on the $280 million project (ENR Oct. 7, 1954, p. 75). The 80-mi section opened to traffic connects with the Ohio Turnpike at the Indiana-Ohio State line and extends west to South Bend, which is about 90 miles southeast of downtown Chicago.

Dedication ceremonies for the entire four-lane divided toll road will be held Sept. 17, at which time another section is expected to be put into operation, extending on west about 50 miles to Gary, Ind. By the middle of November the entire 156 mi toll road is expected to be in operation from the Ohio State line on the east to the Indiana-Illinois State line on the west where a connection will be made with Chicago's Calumet Skyway toll road at 106th St. and Indianapolis Boulevard.

The toll for passenger cars from South Bend to the Ohio Turnpike has been set at $1.00. For trucks, it will range from $2.40 to $9.65, for a one-way trip. For a one-way trip over the entire 156 mi toll road, the charge for a passenger car will be $1.95; for buses and commercial trucks the charges will range from $2.75 up to $13.75. Special or over-sized vehicles using the toll road will pay a one-way fee of $18.75 for the entire trip, graduated down between interchanges.

Speed limits on the toll road, established by the Indiana Toll Road Commission, are 65 mph for passenger cars, the same as permitted on state highways.

Top permissible speed for buses and trucks however, have been set at 5 mph above legal limits on state highways for buses the top speed is 60 mph and for trucks, 50 mph.

Kansas Turnpike Bridge Is Memorial to Young Engineer

The Kansas Turnpike Authority has dedicated its largest bridge as a memorial to Jack L. Fisher, 30-year-old project engineer who was killed in an auto accident last September while inspecting other turnpike bridge construction.

The 2,315-foot bridge spanning the Kansas River at Lawrence was the first portion of the 236-mile Kansas Turnpike on which construction was started late in 1954. It carries two 28-foot roadways across the river.

The eight river piers rest on sandstone about 30 ft below stream bed. The abutments and the pier near the Union Pacific Railroad tracks are supported by 14-inch steel piles bearing on sandstone.

The superstructure consists of continuous deck trusses flanked by girder approach spans, the longest truss span being 333 ft.

The turnpike is scheduled to be opened Oct. 15.

D Tournapulls picked up 5-yd. pay-loads on this highway widening project. On typical 1800' cycles, round-trip time averaged 3.4 minutes. Four of these fast rubber-tired earth-movers were used on the job.

Using fingertip electric controls, Pull operators spread fill evenly in farmer's yard. At another farm, "D's" spread waste material to build a stockpond dam across a shallow depression in a field.

"Only equipment we could use to get job done economically,"

says Supt. Ralph Cox

McDOUGAL-HARTMANN CO., of Peoria, Illinois, contracted to improve a 3¾-mi. section of U.S. Highway 24, near Mt. Sterling, Ill. It involved widening each side of the roadway by 1½ to 2 feet, plus digging ditches. Before work started on the 47,000-cu. yd. job, Supt. Ralph Cox analyzed the job to make equipment recommendations. He found most of the yardage to be moved could be used to build up shoulders. But about 8,000 excess yds. would have to be wasted.

Taking all factors into consideration, Supt. Cox reported: "D Tournapulls are the *only* machines that can get this job done economically." Here are his reasons why:

1 Crawler-scrapers couldn't be used because they would dig up farmers' driveways and fields when hauling waste fill. They could not cross the highway without special planking. And most important, their slow speeds would run up dirt-moving costs, prolong the project, cut the profit margin per pay-load.

2 Elevating graders and trucks were also considered. This method would have required a large fleet of expensive trucks, plus a number of flagmen to handle traffic on this heavily traveled highway.

So the McDougal-Hartmann Company bought 2 high-speed rubber-tired D Tournapulls and rented 2 more to handle the scattered ditching, shoulder-building, and wasting called for on this job.

5 yds. in half a minute

"D's" worked both sides of the road, alternating from side-to-side for distances of about 1000 ft. Push-loaded by a motor grader or crawler tractor, the "D's" heaped 5-yd. pay-loads of clay-loam in less than half a minute. Fast rubber-tired scrapers completed an average 1800' cycle every 3.40 minutes. This included .42 min. for loading, 1.47 min. hauling, .26 min. spreading, and 1.25 minutes return.

Not only were the 28 mph "D's" profitable producers for McDougal-Hartmann on these short cycles, but they proved to be even more economical on the long 3000' one-way hauls that followed.

Constructive use of excess dirt popular with farmers

Excess dirt was used to improve farm yards and fields in the area. On a typical operation, after loading from ditch cuts, "D's" crossed the highway and spread waste dirt over low spot in a farmer's yard. When that farmer's yard was finished, they switched over to build a stockpond dam across a shallow depression in another farmer's field. As a result, two local land owners benefited, and the excess dirt problem was solved without bother, delay, or expense.

"D's" ability to travel fast over existing paved road, without damaging surface, was one of the reasons it was chosen to move earth on the U. S. Highway 24 widening project.

"Ideal for scattered jobs"

Supt. Cox said, "'D's' were ideal for this job where scattered cuts and fills along right-of-way were necessary."

He also liked their ability to get into farmers' fields without elaborate preparations and precautions against property damage. He added: "Crawler tractors would have dug up the fields so much that the farmers would have refused the fill material."

Ask us about the fast, versatile D Tournapull. Find out what this machine has done for others . . . what it can do for you.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1010-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

WIRE ROPE TALKS

SUBJECT:
STORING WIRE ROPE OUTDOORS

Practical hints on the use and care of wire rope by Robert M. Kilian, Chief Engineer of Leschen Wire Rope Division, H. K. Porter Company, Inc.

QUESTION:

What is the best method of storing wire rope outdoors?

ANSWER:

If you think of wire rope as a machine of many parts built to close tolerances, you quickly understand why it should be protected from outside exposure, particularly from dampness or humidity. Extended exposure under severe conditions will impair wire rope to the point of substantially reducing its effectiveness. After idleness and lack of care it may be of little use.

For example, rust tends to bind wires together so they are not free to move back and forth. Then they fail to adjust themselves when lifting or pulling a load. They do not move properly in operation around sheaves.

Lubrication and Cleaning

The outer layer of new wire rope to be stored on its shipping reel should be covered with a heavy protective lubricant. A generous application will tend to protect the entire length. "LePro" Wire Rope Protector, a Leschen product, is especially formulated for this purpose. You apply it cold, and it goes on quickly with a brush or by pouring slowly from a can.

Wire rope that has been used should be cleaned thoroughly with a wire brush, compressed air, or superheated steam. Then lubricate it with a penetrating lubricant that will coat all strand wires, internally as well as externally. Next coat the rope with "LePro" to seal in the other lubricant and repel penetration of moisture and fumes. Finally, wind the used rope on a reel.

Following lubrication with "LePro" it is advisable to cover the rope on the reel with waterproof or tar paper. Seal the paper at the flange with "LePro."

Taking proper care of high-quality products like HERCULES Red-Strand wire rope is as important as selecting them in the beginning. You are money ahead on both counts.

Storing and Re-Use

Select a storage area that is clean and dry, and as well protected from the weather as possible. Avoid nearby acid fumes or other corrosive agents. They can cause embrittlement of the surface of the wires. Place reels on wood or metal supports.

When rope is returned to service, excess lubricant can be wiped off as the equipment is run slowly. Lubricants may pick up some dirt later, but this will cause far less damage than would the leaching effect resulting from the use of a solvent for cleaning.

High quality and performance built into Leschen wire rope is well worth preserving by proper storage methods. To obtain this quality in the first place remember to specify the rope with a RED STRAND—the symbol of highest quality wire rope for seventy-five years.

A Leschen district warehouse or distributor is nearby. See your Leschen man for other rope-saving suggestions—and for HERCULES Red-Strand Wire Rope.

Reprints of this "Wire Rope Talks" are available on request

LESCHEN
HERCULES Red-Strand® WIRE ROPE

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

HKP

New Warning System Set Up To Announce Pike Blasting

Blasting operations along the construction route of the 129-mi Connecticut Turnpike will be preceded by a uniform schedule of signals from air horns. In addition, residents of the area will be warned verbally of imminent blasting.

The signals and verbal warnings were decided upon as a result of a recent dynamite blast that went out of control and slightly injured 14 persons.

The alarms—to be installed by the contractors from plans furnished by the Highway Department—will not conflict with the tone of air raid, fire or police horns and signals. Under the new warning system the first alarm will be sounded 10 to 15 min. before detonation and will consist of five 15-second blasts. Just prior to the explosion, 10 short blasts will be sounded.

Plans for Virginia Turnpike Dimmed by Consultants Report

Prospects for a toll turnpike across the southwestern section of Virginia—to connect the West Virginia Turnpike with an as yet unbuilt North Carolina tollroad—are thinner than ever.

The New York consulting firm of Coverdale & Colpitts told the Old Dominion Turnpike Authority that "the potential for the . . . turnpike project has not materially improved," and recommended that a new survey of the 88-mi. West Virginia pike be made early next year. This pike, said the consultants, should be given additional time to prove itself before any extension into Virginia is considered. The Old Dominion Authority would build any Virginia route.

Location of Lake Crossing Awaits New Recommendation

The Washington State Toll Bridge Authority has deferred action on fixing location for a second floating bridge across Lake Washington east of Seattle until a recommendation can be made by the State Highway Commission.

The Chicago consulting engineering firm of DeLeuw, Cather & Co., already has recommended that the second bridge be constructed parallel to the first. However, this would necessitate re-imposition of tolls for the Lake crossing and Washington's Attorney General has ruled that such action could only be authorized by the state legislature.

It is estimated that action will be delayed at least 60 days.

"We like its power and speed"

That's what manager E. J. Adcock of the R. B. Tyler Co., Jackson, Mississippi, says about the Adams 660 motor grader. After working the big machine for a couple of years, Adcock is especially impressed with its performance and ease of operation.

Photographs on this page were taken as Tyler's "660" bladed a median strip on East-West U.S. Hwy. 61, between Natchez and Washington, Mississippi. The company was building a second lane to complete 4.4 miles of 4-lane divided highway.

Power for profitable production grading

Manager Adcock likes Adams' ability to take a big cut and muscle thru the tougher jobs. He's looking for production—and getting it! 8 forward speeds—1.3 to 26 mph—and 4 reverse gears—1.1 to 13.7 mph—cut job-time, do every grading operation at fastest practical rate. Adcock also likes the ease with which operator maneuvers the 28,000-lb. machine, cuts smooth finish grades, and travels in traffic at 26 mph between jobs.

Clear view of his work, and double-action brakes, give Operator Frank Freeman confidence to blade at time-saving speeds.

Does difficult jobs fast

J. E. Polston, superintendent, finds Adams' work-horse ability and rugged construction keep his jobs ahead of schedule. Polston makes the most of "660's" road speed as he schedules it from one task to another, keeps his men and machines working at top capacity. On the U.S. 80 job he used the "660" to spread fill behind earthmovers, dig drainage ditches, scarify crossings and hard clay, cut high bank-slopes, level subgrade, and bring center strip to grade.

Easy handling . . . good ride . . . less maintenance

Operator Frank Freeman had always been partial to a competitive-make grader. In the jargon of the road crew, he was a "—" man . . . he thought there were no other graders *until he worked the "660"*. Now he says Adams is "the best". Frank likes the heavy-welded front-end construction with fully-enclosed leaning wheel mechanism—"that is tight and stays in adjustment." The ride is comfortable, rubber engine-mounts isolate vibration, foam-rubber pads the seat. He likes the way it handles, with mechanical hydraulic power steer, dual action brakes, and handy foot accelerator. Freeman feels that 13.7 mph reverse helps him get more work done, says the Adams "can back-up a quarter mile in the time some graders take to turn around".

You'll like Adams too!

You'll like their cost-cutting work capacity . . . 26 mph get-up-and-go . . . time-saving maneuverability—operator comfort. You'll like the range of sizes . . . 80, 104, 123, 150 hp . . . a grader for every size job. Why not telephone your LeTourneau-Westinghouse Distributor, right now, and ask for a demonstration?

AG-15-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

At the edge of the Gulf of Mexico, the horseshoe curve of the Brazos River resulted in a wasteland for which farsighted planners could see a profitable use

1. Wasteland at center (to left of road and storage tanks) has now become a new port.

Creating a New Port for Freeport

Cyril S. Adams, consulting engineer, J. Russell Wait, gen. mgr., Brazos River Harbor Navigation District

Completed and in operation is a new rail, truck, deep-sea terminal near the mouth of the Brazos River at Freeport, on the Gulf of Mexico.

This public facility climaxes efforts of Brazoria County, Texas—acting through the Brazos River Harbor Navigation District—to provide a modern, public, dry-cargo terminal that can assist with the progress and development of the industrialized area.

The area encompassed by the Brazos River Harbor Navigation District contains some 1,130 square miles and includes several navigable waterways—28 mi of the San Bernard River, 20 mi of Bastrop Bayou, 35 mi of the Intracoastal Canal, 30 mi of the Brazos River, and the mouth of the Brazos at the Gulf.

Late in 1950, voters within this navigation district approved bonds for acquiring land and construction of a complete public deep-sea terminal for Brazos Harbor. This initial program has now been completed with construction of Brazos Harbor No. 1.

The new deep-sea terminal lies only three miles from the Gulf of Mexico and adjoins the old Brazos River, which is now an arm of the Gulf. Thirty years ago the lower six miles of the stream were diverted from its natural channel into a dredged channel, so that the old river could be used as a harbor without the necessity of dealing with excessive silting.

3. New port begins to take shape as rail line is relocated, dredge cuts channel through to main river and shapes a turning basin.

• **History and geography**—The Brazos River drains some 47,000 sq mi of Texas.

The average flow into the Gulf is some 5,500,000 acre-ft per year, and the accompanying silt load during flood flows is often large.

The mouth of the Brazos is the oldest deep-sea port in Texas and played a major role in the state's history before, during, and after the Texas revolution. Stephen F. Austin

2. Work starts in the dry on wharf and foundations for transit shed, railroad and road facilities. Piling will support structure.

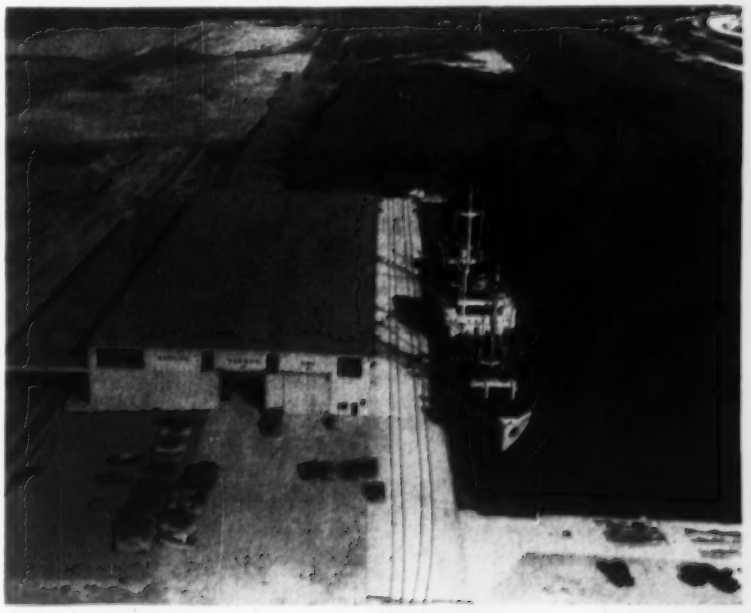
and his first colonists landed at the mouth of the Brazos in 1822, while in 1824 the harbor was declared a port of entry by the Mexican government. The harbor for many early years had the deepest water in any Texas port.

Jetties into the Gulf and across the bar at the mouth of the Brazos were begun by private interests in 1888, and $1.5 million was spent before the company failed. Then, in 1899, the federal government took over the jetties and the maintenance of the harbor. The harbor, designated on current maps as Freeport, now has a depth of 34 ft, with authorization to 36 ft.

Until now, there has never been a publicly owned terminal open to all on the same terms. The traffic accordingly has been of a private nature, with local industries installing and using their own facilities along the harbor's shoreline. The large shippers from this port are now Phillips Petroleum Co. and The Dow Chemical Co., and both companies moves large volumes of freight (mostly liquid) through the port from their own terminals. There are a number of other small private docks along the upper portion of the old Brazos, but these are used principally for barged materials, shrimp and fishing boats, and pleasure craft—all shallow draft.

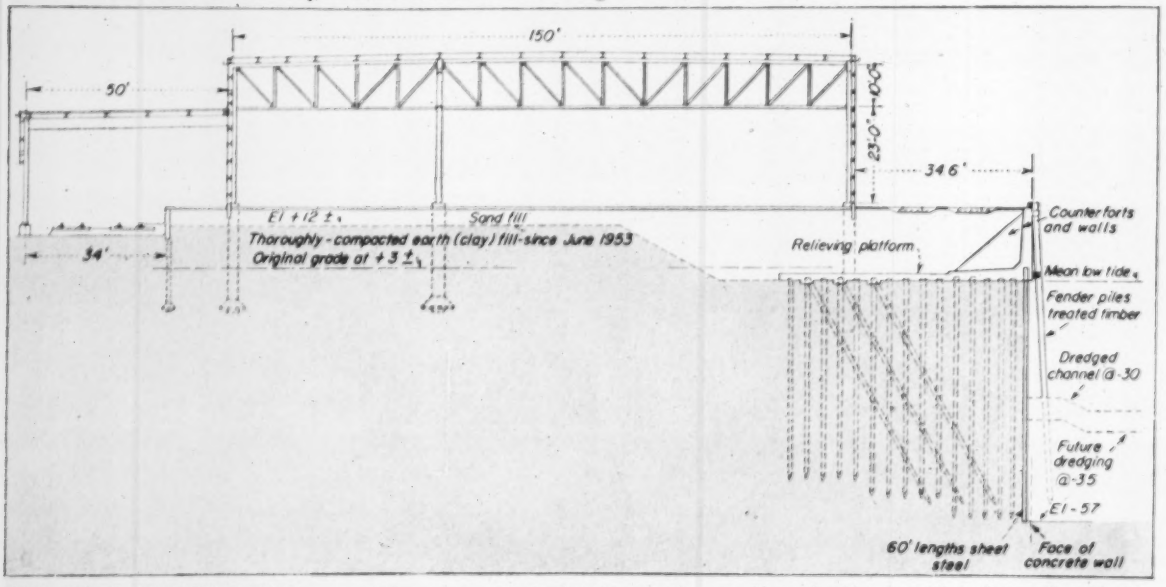
• **Land acquisition**—Upon approval of the bond issue, the navigation district secured a parcel of land contiguous with the old Brazos (or Freeport Harbor) but extending back some 5,000 ft from the right bank and into the southeast corner of the City of Freeport.

With the funds available, one modern terminal has been completed and there is room along the district's property for some six additional units, to-



4. First ship is berthed at completed shed and wharf, and new port is in operation. There's plenty of room for later expansion.

. . . Dock built on dry land, channel dredged to it



WHARF AND TRANSIT SHED are carried on a pile supported relieving platform which is preloaded to reduce the earth pressure against the steel sheetpile bulkhead. The preload is induced through the use of turnbuckles incorporated in adjustable tie rods embedded in the concrete platform and joining the bulkhead to batter piles.

gether with areas set aside for small industries which will require locations in proximity to deep water.

At the same time the land was acquired for the terminal, the district secured a strip of land from the harbor area to the new or diverted Brazos River and thence to State Highway No. 36 for the purpose of constructing both a road and railroad around the city of Freeport.

• **Construction**—In the development of the new harbor area it was necessary to move a portion of the Missouri Pacific Railroad, which crossed the proposed harbor; and to relocate pipelines and power lines to clear the areas required for the improvements.

The district then constructed 900 ft of deep-sea dockage, 650 ft in an east-west direction and 250 ft in a north-south direction to form a space which can receive the largest dry-cargo ships afloat as well as a shorter berth for smaller ships and barges.

This dockage is at the inside corner of the designated "Brazos Harbor" area and a turning basin has been dredged along with the access channel so that the largest ships can be berthed. Because of dredging through the levee bank of the old Brazos to build the harbor, it was necessary to construct a levee system around the harbor area to complete the tidewater protective levee for the city of Freeport and its environs.

• **Build, then dredge**—It was possible to construct the dock on dry land and then dredge the deep-water channel from the old Brazos to the dock.

Such an arrangement permitted a large saving, compared with building a relatively high-type facility in deep water. At the same time, it proved most economical to construct a bulkhead type of dock using the least expensive but sound load-bearing piles of untreated timber to carry dock loads.

The present and probable future water depths at the dock required that a relieving platform be placed near mean low tide, to reduce the active earth thrust on the continuous sheetpile bulkhead. The reinforced concrete relieving platform is supported on untreated vertical timber piles and also has embedded in it batter timber piles (inclined 30 deg to the vertical) to absorb the horizontal thrust caused by pressure of wet earth along the solid bulkhead. These inclined piles also resist the live loads created by berthed vessels.

The relieving platform carries the railroad and other live loads on the wharf apron as well as the dead loads above the platform.

• **Preloaded platform**—A series of large tie rods was placed in the relieving platform to join the inclined piles with the steel bulkhead so that the horizontal loads on the steel sheet piles could be carried through the tie rods to the system of inclined piles.

The timber piles were driven first, followed by the steel bulkhead piles, followed by pour No. 1 at the rear of the platform and pour No. 2 at the front of the platform, omitting the center portion of the platform that exposed the turnbuckles of the tie rods.

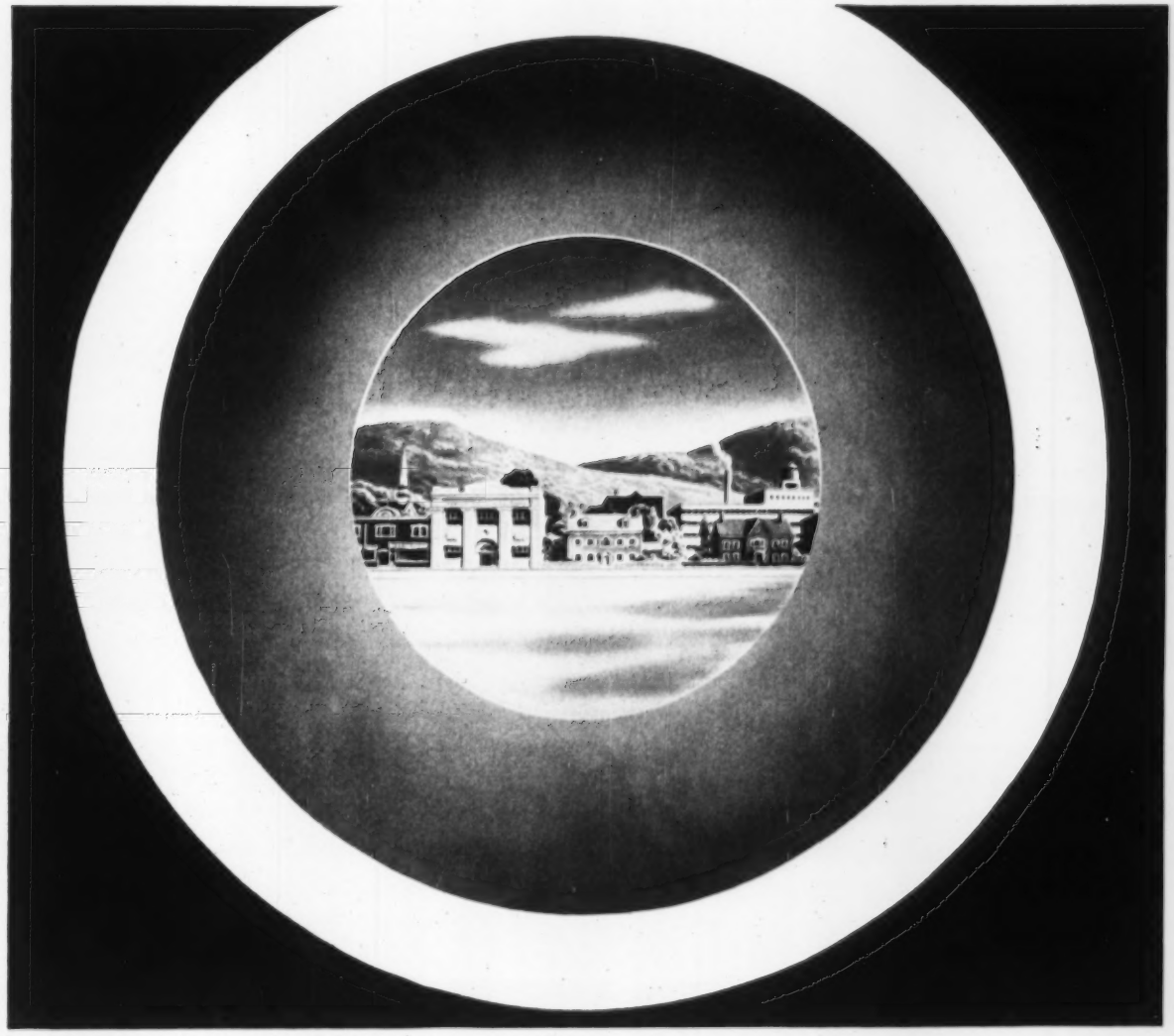
After curing, each tie rod was tightened with the turnbuckle to a predetermined measured torque and accompanying axial tensile load so that the batter-pile assemblies could be preloaded by pulling against the steel bulkhead under conditions that would be identical with structural loading of the completed installation.

In other words, by preloading the inclined pile units with the bulkhead before dredging, the bulkhead, when in service, must be subjected to at least that much horizontal load before additional stresses occur in the timber piles, tie rods, or steel bulkhead piles. This arrangement has resulted in a minimum of horizontal movement in the bulkhead wall and in the upper wall after final dredging, since all slack has been taken out of the structure and some of the initial load's strain or movement has already been experienced.

After preloading the tie rods with the aid of a torsion wrench, and checking them at least twice, the center section of the platform, or pour No. 3, was made.

There then followed construction of the reinforced-concrete, counterforted, retaining wall above the platform to elevation + 16 above mean low tide.

This wall was designed to withstand not only the static and surcharge loads from the dock surface (on the inside)



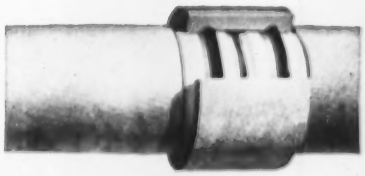
The pipe that's built for tomorrow

K&M "Century"® Asbestos-Cement Pressure Pipe slashes maintenance costs

Over the years, pumping costs are stabilized, maintenance is minimized with K&M "Century" Pressure Pipe. It is non-tuberculating, non-corrosive, non-electrolytic—its bore remains smooth and clean. "Century" Pipe is made of asbestos fiber and portland cement...two practically indestructible materials which assure long life.

And it's lower in initial cost, too! It's light in weight for easy, inexpensive transportation and handling, and even unskilled labor can lay it quickly in any kind of weather.

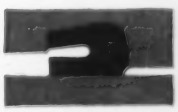
"Century" Pipe can save a community big tax dollars. Write for full information!



NEW K&M "FLUID-TITE"® COUPLING*

Crews can lay more pipe per hour in any kind of weather with K&M "Fluid-Tite" couplings.

*Patent applied for



Rubber rings compress to allow easy, quick entrance for pipe.

Pressure expands rings. Higher pressure means tighter seal.

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. . . Transit shed has welded frame

FOREST OF WOOD PILING supports main structure of wharf and transit shed.

but to withstand considerable shock from a ship striking the wall (on the outside). The counterforts lend great stiffness to this vertical wall to meet such loading eventualities. Cleats for mooring ships, and services to berthed vessels for fresh water, fuel oil, electric power, and telephone are provided along this 900 ft of wall. A complete fire-pump and piping system, using sea water, has been installed along the dock.

After retaining-wall pouring and curing, the area above the relieving platform was filled with compacted sand from a nearby beach. A semicircular drain surrounded by graded crushed stone was placed along the top of the relieving platform, then the wharf apron was paved with concrete in which are embedded double tracks of new girder rail for railroad service.

• **Provisions for future**—These flush-embedded girder rails were welded at the joints, with provisions made in the embedded length of 800 ft for expansion and contraction. The rails were tied with steel channels, then blocked and shimmed. This was followed by embedding in a heavy concrete slab.

At the outside end of the long side of the dock, provisions have been made for a future heavy-lift crane by providing four large foundation piers and their supports as a part of the relieving platform.

• **Transit shed**—Along the 650-ft side of the dock, a transit shed with attached tram shed has been constructed. The shed parallels the dock and leaves the double-tracked paved apron, 45 ft in width, as a clear operating space between shed and berthed vessel.

The transit shed is 396 ft long by 150 ft wide, the two-track tram shed 396 ft long by 50 ft wide. The clear height from floor to bottom of the lower chord of the roof trusses is 23½ ft.

The shed has two large overhead rolling doors at each end, each opening has a clear width of 24 ft and a clear height of 23 ft. Eight smaller overhead rolling doors are installed down each long side. This large quantity of doors will provide the means for a flexible cargo-handling operation and also will serve to ventilate the structure, since only two small outside windows have been provided in the entire shed.

All the structural steel frame is welded, and has been designed to withstand hurricane winds in any direction of from 125 to 150 mph.

In order to fit modern railroad car lengths, the bents for the building have been placed on centers of 22 ft.

The tram shed is spanned by steel girders, but the transit shed supports its roof on trusses with spans of 100 ft and of 50 ft to form the 150-ft transverse width.

On every second bent the intermediate column has been replaced with a longitudinal truss so that the entire transit shed floor of 150 ft by 396 ft has only nine interior columns, for ease and speed of handling and storing cargo with mechanized equipment.

Except for the row of building columns that rest on the relieving platform, all columns are carried on machine-drilled reinforced-concrete footings through the fill material and into undisturbed clay, and enlarged at the base to carry required loads. Footings have sufficient mass to restrain the columns at their bases to one-third of their working stresses. The concrete floor slabs are placed on clay fill taken from the original harbor area and compacted thoroughly, topped with a sand for cushioning and sub-grading.

The longitudinal sides of the transit shed structure are covered with galvanized heavy sheet steel along the bottom six ft; the remaining siding is mostly of corrugated asbestos-cement. In the upper 12 ft of the sides and ends of the transit shed, translucent corrugated plastic siding has been worked into the asbestos-cement panels to provide daylighting.

The roof is flat and consists of a steel deck fastened to the purlins by automatically welded studs with riveted heads, covered with rigid insulation secured to the deck by mopped bitumen and sheet metal screws, then finished with four plies of builtup roofing and gravel.

A novelty in the roofing arrangement is the fastening at the eaves, where the mopped plies are carried over the edge of the decking and over a plate welded to the end purlins; a steel angle is then fastened to the plate with power-driven threaded studs to hold the ends of the plies tight against the building frame, securing the ends against lifting during hurricanes. There are no openings in the roof deck.

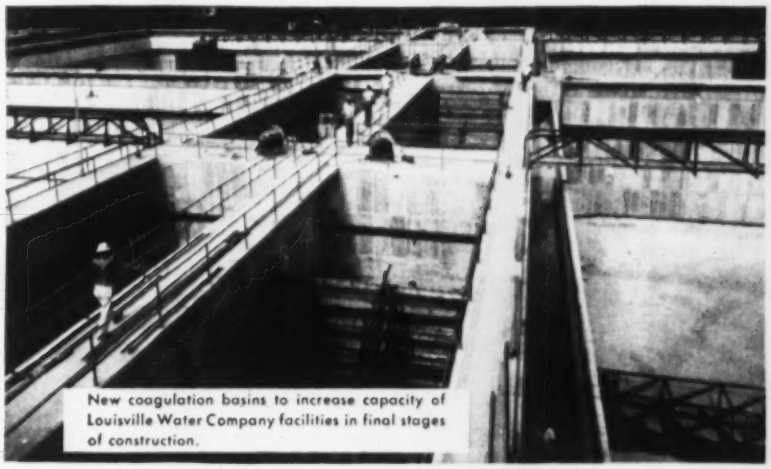
The shed is furnished with fire hydrants and hose racks inside and outside, connected to the dock fire-fighting system; lights and power outlets for operation of small conveyors and machines; office space for the terminal superintendent and toilet rooms for the dock workers.

The Brazos River Harbor Navigation District is headed by George G. Badge, chairman, of Brazoria.

Construction was handled by Brown & Root, Inc., of Houston (earthwork), Jorgensen Construction Co. of Freeport (dock), Tellepsen Construction Co. of Houston (structure), Gulf Construction Co. of Houston (building foundations and paving), and Wm. A. Smith Construction Co. of Houston (railroads).

(Advertisement)

How Pre-Fab Forms Saved Time, Material On Water Plant Job



New coagulation basins to increase capacity of Louisville Water Company facilities in final stages of construction.

Contractor Forms 200,000 sq. ft. contact area with 14,000 sq. ft. of panels

Forming a 350' square water basin with exterior and interior walls 31' high presents no problem to the experienced contractor. But, when the job must be done in minimum time at lowest possible cost to meet tough pouring and finishing specifications, careful planning and operation are required.

When the Henry G. Bickel Company and the Charles A. Connel Company were awarded the contract for the massive Louisville Water Company coagulation basins at Louisville, Kentucky, they selected the Uni-Form Panel System to form the 200,000 sq. ft. of contact area the job required.

Forming started fast, because the Uni-Form Panel System is ready to use when it reaches the job. Valuable time, labor and material savings were made because Uni-Form Panels require minimum alignment and bracing on 1 side only. The Uni-Forms were assembled and locked into a tight, rigid form with Uni-Form Ties supplied in exact lengths to provide automatically accurate thickness of both battered and straight walls.

One side of the form was erected, permitting easy, unhampered placement of reinforcing. Since specifications did not permit the use of chutes or tremies, pouring pockets were provided as the forms were closed to maintain positive control of concrete placement.

Fast erection and stripping features of the Uni-Form System enabled the contractor to form the entire 200,000 sq. ft. of contact area with only 14,000 sq. ft. of Uni-Form Panels. Panels were used an average of 14 times without the necessity of maintenance or repair.

The simplicity of the Uni-Form Panel System, together with the services provided by Universal Form Clamp Co., insured fast job progress and satisfactory completion under the capable supervision of Harry Hunter, Supt.

Uni-Form Panels are versatile, high speed forming tools. They're used by the country's most successful contractors to form every conceivable type of construction. They are rented or sold. Universal Distributors and Branches are located from coast to coast. Write for Uni-Form Catalog and complete details on Uni-Forming—the modern way to form concrete.

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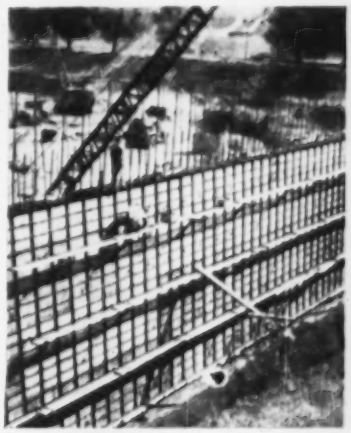
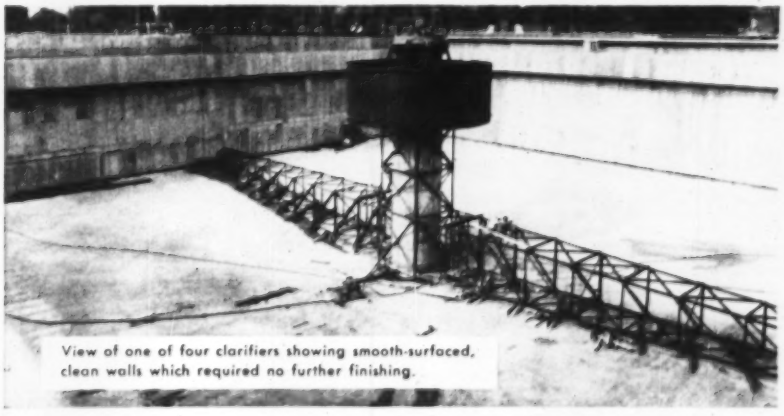
Branch Offices and Warehouses:
Los Angeles • San Leandro, Calif. • Houston, Texas
Cleveland, Ohio • Baltimore, Md. • Atlanta, Ga.



Section of exterior battered wall 31' high, showing Uni-Forming nearly complete. Uni-Form Scaffold Brackets replaced costly conventional scaffolding systems.



View of one of four clarifiers showing smooth-surfaced, clean walls which required no further finishing.

Pouring pockets permitted specified control of concrete placement.

Hauling men and materials above rugged pack trails . . .

Aerial Tramway Serves Airway Installation

Charles F. Dwyer
Heron Engineering Company

The Civil Aeronautics Administration, in its nationwide program of installing VHF (Very High Frequency) and UHF (Ultra High Frequency) aircraft communication facilities, has frequently been confronted with the problem of moving materials and personnel to the nearly inaccessible mountain-top sites of transceiver locations.

Construction of a transceiver atop rugged South Franklin Mountain, near El Paso, Texas, presented one of its most difficult tasks until a 3,400-ft tramway was installed.

The tramway consists of two terminal structures and a single intermediate tower carrying a track cable from which the carrier car is suspended. A continuous haul cable, operating through a reversible drive unit, moves the car between terminals, and steel bumpers guide the car along its path in the terminal areas.

Vertical rise on the system is 1,640 ft and horizontal distance is almost 3,000 ft. Over part of its length, the line is suspended nearly 400 ft above the barren, rugged mountain slopes.

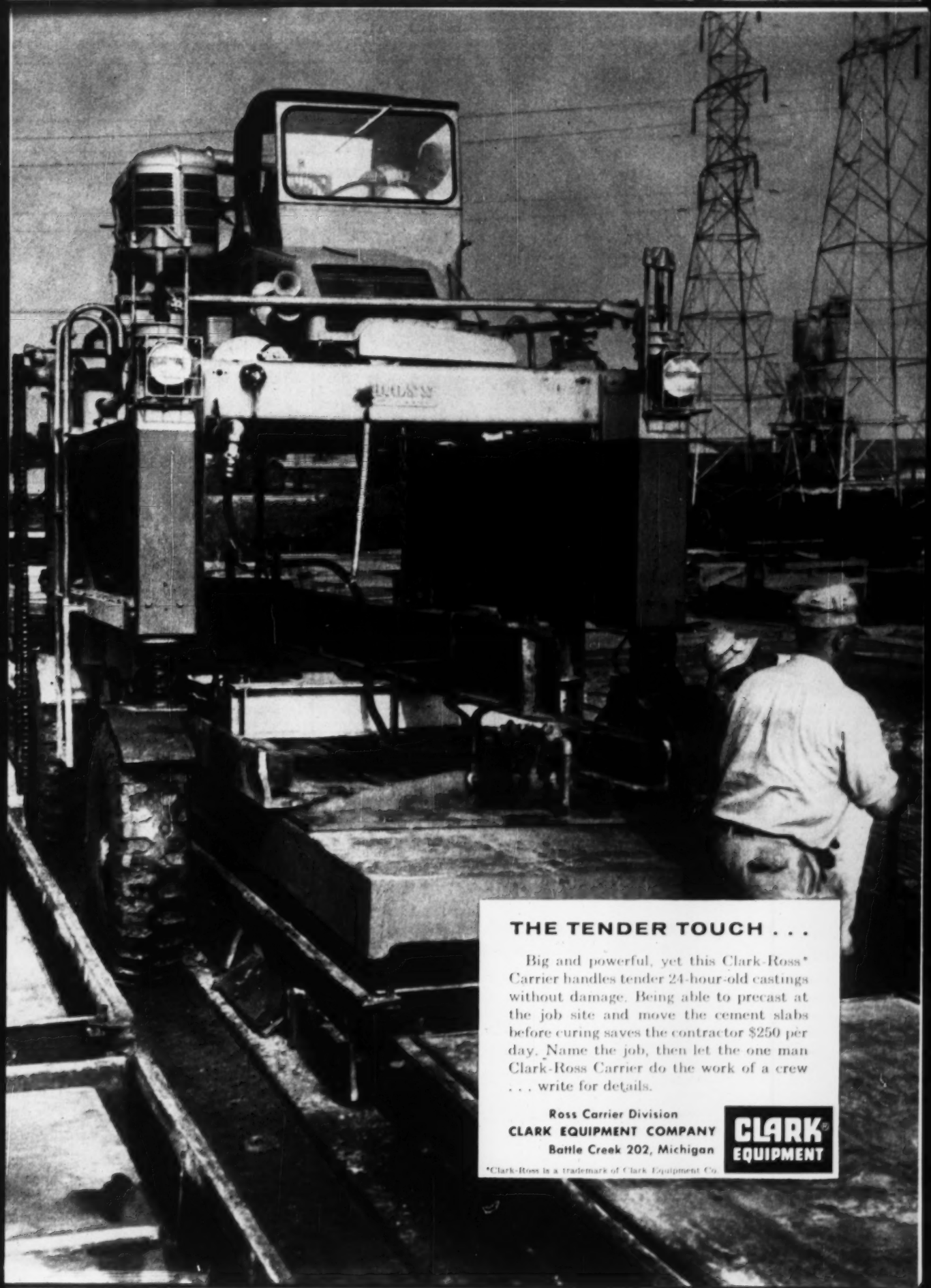
Capacity of the carrier is 1,000 lb, and operating speed is 300 fpm. Sides of the car are readily opened for materials, closed for use by personnel.

A two-wheel trolley unit rides the

RUGGED TEXAS MOUNTAINSIDE demonstrates need for the tramway. Tower is 100-ft intermediate support for hand and track cables.

UPPER TERMINAL is at site of transceiver on mountain top. Track cable passes over sheave to rock anchor.

LOWER TERMINAL, shown with tramcar (arrow) in loading position, is freestanding. Track cable passes through it.



THE TENDER TOUCH . . .

Big and powerful, yet this Clark-Ross* Carrier handles tender 24-hour-old castings without damage. Being able to precast at the job site and move the cement slabs before curing saves the contractor $250 per day. Name the job, then let the one man Clark-Ross Carrier do the work of a crew . . . write for details.

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CLARK EQUIPMENT COMPANY
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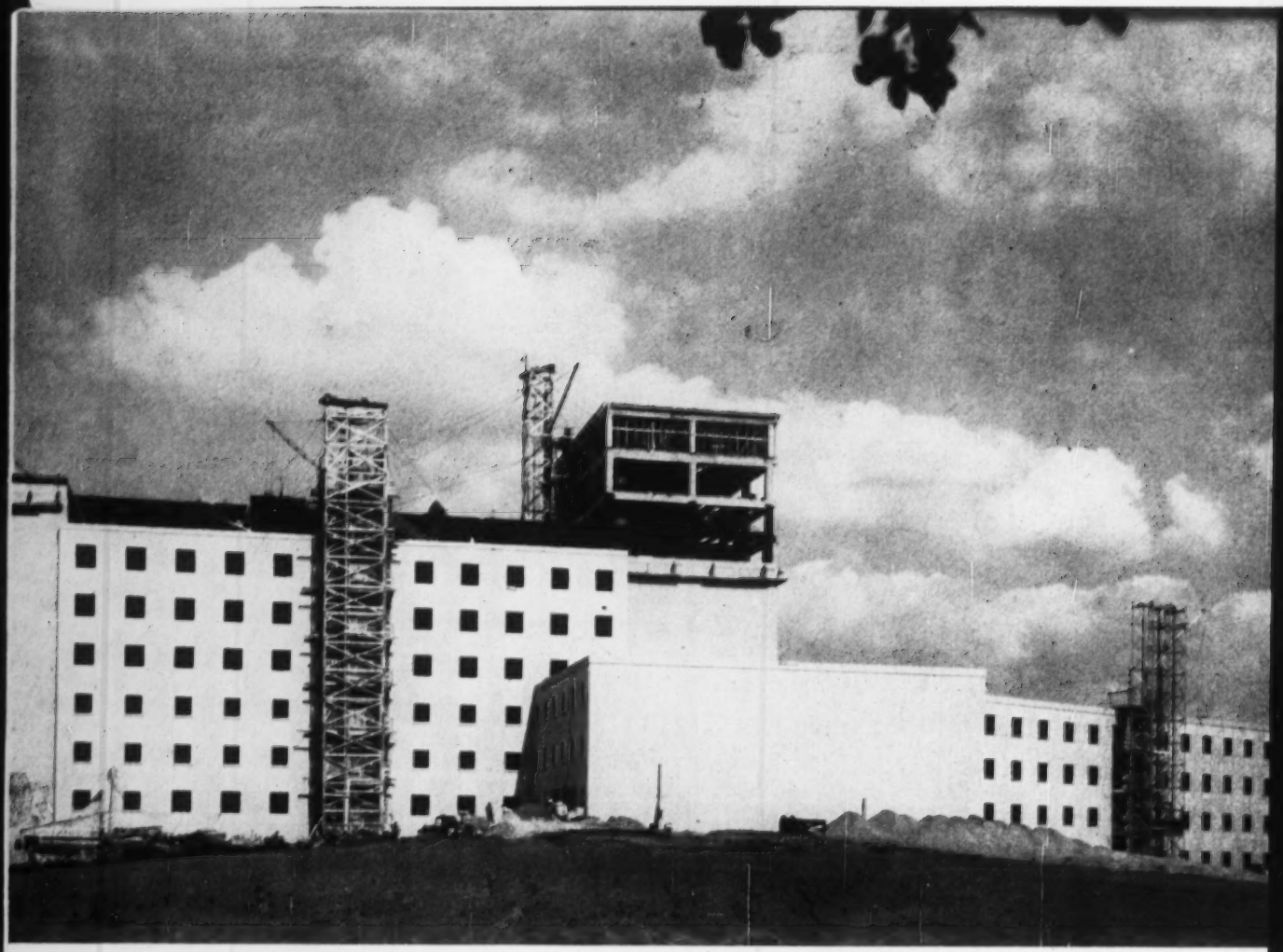
*Clark-Ross is a trademark of Clark Equipment Co.



100 MILLION POUNDS—STRAIGHT UP!

100,000,000 POUNDS of construction material for the Prudential North Central Office were moved by American Hoists on the job!

Three thousand tons of steel, 20,000 yards of concrete, 42,000 cubic feet of stone—a hundred million pounds! That's the material handled by American General Purpose Hoists during construction of the North Central Home Office of Prudential Insurance. For top flight performance on any hoisting job—handling any material to any height, American Hoists offer precise, safe load control through the smooth action of time tested clutches and brakes. Power flow is smooth, economical because of American's anti-friction, self aligning bearings and machined gears. Rugged American Hoists give you trouble-free service for hundreds of jobs.

Your American Distributor will show you hoists beginning with capacities of 3000 pounds single line pull and up!

AMERICAN HOIST
and Derrick Company
St. Paul 1, Minnesota

TRACK CABLE COUNTERWEIGHT, attached by two-part tie to cable, maintains proper tension under all conditions.

Photo courtesy of Civil Aeronautics Administration

TRAMCAR AT UPPER TERMINAL affords view of single track cable and the reversible, dead-ended haul rope cable.

track cable and supports the car. Mounted between the 8-in. steel trolley wheels is a safety brake that locks to the track cable in emergencies.

• **Tramway structures**—The lower terminal structure consists of loading platform, machinery housing, track- and haul-rope counterweights and anchorage. Structural steel was used to support drive machinery and counterweight frames. The building proper is concrete block, with concrete floors and built-up roof over timber framing.

The 3,000-lb haul-rope counterweight is suspended in guides which extend below the machinery room floor. A 10,000-lb concrete counterweight for the single-track suspension cable is suspended in a frame above the lower anchor pad. Height of the block is regulated by a hand hoist on the two-part line connecting the track cable and counterweight.

The intermediate tower is of light structural steel, anchored to solid rock. The rocker-type cable saddle is more than 100 ft above the foundation. Roller-bearing-mounted steel sheaves carry the haul rope on an 18-ft gage.

The upper terminal consists of an open-steel framework, mounting a 36-in.-dia track rope sheave and four 24-in.-dia haulrope sheaves. Steel grating and handrails enclose the unloading platform.

• **Cables**—A single length of 1-in., 6x30 flattened strand, fiber-core wire rope makes up the track cable. A socket is used at the upper terminal anchor, with wire rope clips at the lower, counterweighted end.

The haul cable is a ⅞-in. round, lang-lay, fiber-core wire rope. The 7,100-ft length of haul rope was dead-ended at the car, eliminating splicing.

(Continued on page 46)

SPECIFY
SUMMITVILLE
QUARRY TILE

NOW IN 6
BEAUTIFUL COLORS

☐ Summitville is proud to announce the development of five beautiful new colors in the quarry tile field.

Now, the versatility, beauty and permanence of quarry tile can be fully exploited . . . unlimited by color selection. These new earth colors were developed to harmonize with any color or decorative scheme.

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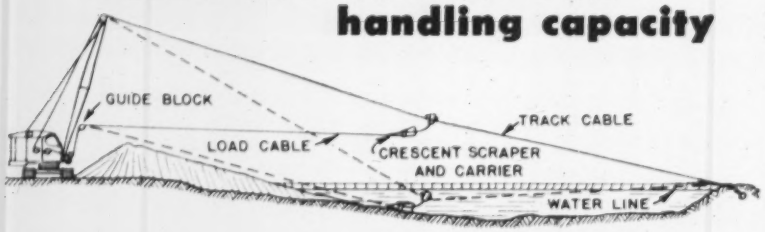
Because no advertisement can do full justice to these colors, we suggest that you consult your local ceramic tile contractor (yellow pages) for information and samples, or write direct for color brochure #13.

Summitville TILES, INC.

SUMMITVILLE, OHIO

the SAUERMAN METHOD...extends the reach of your crane

the CRESCENT SCRAPER...increases its handling capacity



Drawing shows crane using Crescent Scraper and carrier with a track cable. This arrangement increases effective digging range and permits gravity return to the excavation for a faster operating cycle. Maximum operating span is governed only by amount of cable that may be reeved on the drag drum.

Use This Fast, Economical Method For:

Cleaning Ponds
Trenching Streams
Sludge Removal
Cleaning Under Bridges
Building Reservoirs
Beach Construction

Any crane can handle a Crescent Scraper larger than its regular dragline bucket. Smaller units can increase their capacity about 50%. Large cranes can usually double their capacity. When the boom is supported by a strut or outrigger, a Crescent of still greater size can be used. Arrangements of this type have increased rated crane capacity as much as 4 to 1.

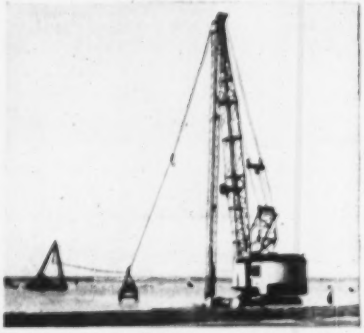
The Crescent hauls its load on the ground and the load is automatically deposited when the bucket is raised. Only the empty scraper bucket is lifted by the crane.

When a crane is equipped with a track cable, Crescent and carrier, it can reach farther, dig deeper under water or from soft areas without the nuisance of mats. Anchorage for the track cable may be fixed—or movable to provide easy shifting to a new line of operation. A tractor makes an excellent mobile anchorage.

Although the track cable method is best for increasing your machine's range, the Crescent can also be cast like your regular bucket.

Get the facts on how much the capacity of your crane can be increased. Give us the make, model and boom length. Ask for Field Report 228 and Catalog J. Catalog T tells how to use Crescents with tractors.

This Indiana contractor used the track cable method with a 1½-cu. yd. Crescent Scraper to trench across a river. After the water main was placed, the scraper backfilled the trench.



Boom support enabled this crane to use a larger Crescent. After a sub-grade of coral was placed, the 4-yd. scraper was reversed and used to grade the beach. Barge-mounted winch served as anchorage for track cable and supplied power to scraper on grading operations.

Important to Users of Blocks and Fittings: Get the new Sauerman bulletins showing the complete line of Wire Rope Fittings and Durolite Sheaves available from stock. Ask for Bulletins 164 and 165.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

• **Drive unit**—A 15-hp electric motor drives the tramway. Speed reduction from the 1,800-rpm motor to the 36-in.-dia, rubber-lined drive sheave, is accomplished with a single-gear reducer. An electric solenoid magnetic type brake on the motor shaft serves as the operating brake.

Emergency braking is provided by a mechanical-type brake on the drive sheave. The brake may be activated manually, or automatically by a raised weight on the control unit.

The automatic control unit provides the principal safety feature of the drive. Both electric and mechanical brakes are automatically applied in the event of overspeed at any time. Reduced speed ranges are provided in terminal approach areas. Brake application follows power failure, mechanical failure or breach of operating procedure.

Another aid to operation is provided by an indicator panel that shows the position of the car on the line at all times. A steel button on the haul cable serves as a positive indicator for spotting the carrier at the upper platform. Electric limit switches positioned in both terminals protect the tramway against overrun.

Speed of the tramway may be regulated within design limits by means of a drum controller. To facilitate lowering a loaded car, a special rotating-type switch has been provided to brake the motor running at synchronous speed.

• **Construction**—Construction of the tramway was carried out in record time, considering adverse terrain. Access to the upper terminal site was by burro trail only, so a construction tramway—or highline—was employed to move materials to upper areas.

To facilitate field work, the tramway design provided for the use of rock anchors instead of the more common concrete piers and anchor bolts. Maximum size of material was restricted for handling by pack train or light erection trams.

Portable gasoline-driven drills were used to imbed steel rods in the solid rock for structure foundations and anchors.

Aerial tramway design and construction for the CAA was carried on by the Heron Engineering Co., Denver, Col., specialists in the aerial tramway field.

The El Paso installation is the most recent of a growing list of tramways under construction throughout the country. The versatile units are being adapted to uses ranging from the highly popular lifts for summer sightseers and winter skiers to materials-handling tramways hauling hundreds of tons per hour.

HOW TO PUT 5000 TONS ON STILTS

Roebling wire members make a hard job easier, cheaper!
May we help you crack a tough problem?

THOSE WEDGE-GRIPS WITH JACKS illustrated at the right operate on wire strands. They were engineered by Roebling's Bridge Department to raise structures weighing 5000 tons or more. The same devices drive supporting spuds into the ocean floor. Similar equipment can also be used for moving loads horizontally.

This is simply one example of the ingenious work of our Bridge Department's Specialized Technical Service in applying wire, wire rope and wire strands to many types of structures either during erection or as permanent members. Importantly, this service is available to everyone—independent, in public service, industry or education—who is concerned with planning, designing or building physical facilities.

While the Roebling name is virtually synonymous with suspension bridges, Bridge Department products and services include materials for and specialized design work in the field of vertical lift, pipe line and floating bridges . . . tramways . . . cable ways . . . ski lifts . . . guyed towers, suspended roofs, and suspension systems of all kinds. In addition, new applications of wire members, providing new efficiencies and economies, are constantly being developed.

We invite you to tell us about any structural project, contemplated or in the works, in which we might be of practical assistance. Bridge Department, John A. Roebling's Sons Corporation, Trenton 2, N. J.

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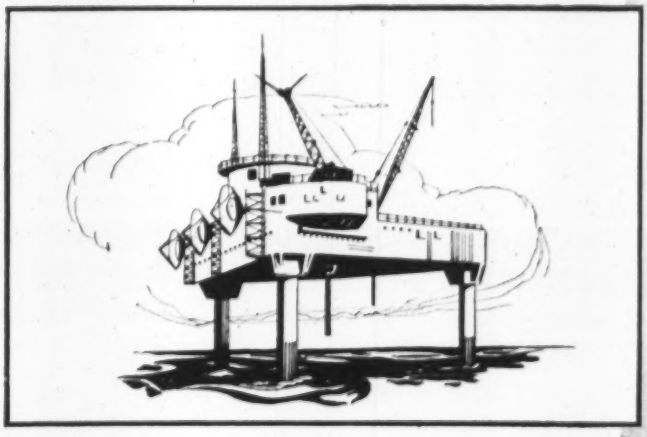
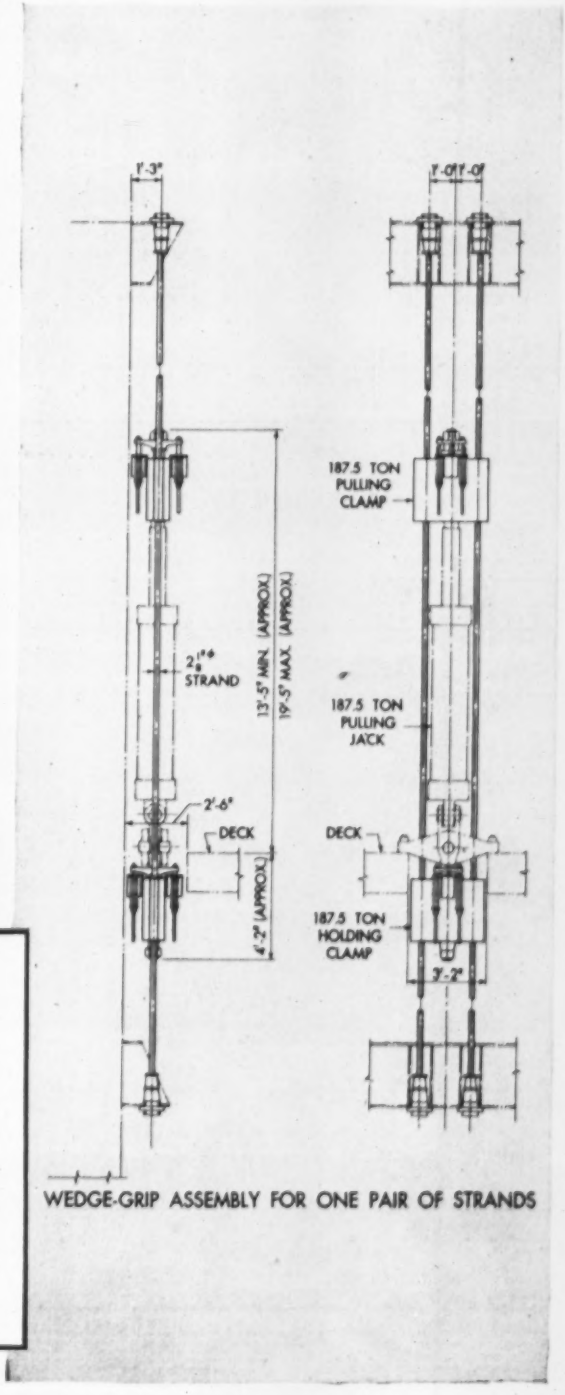
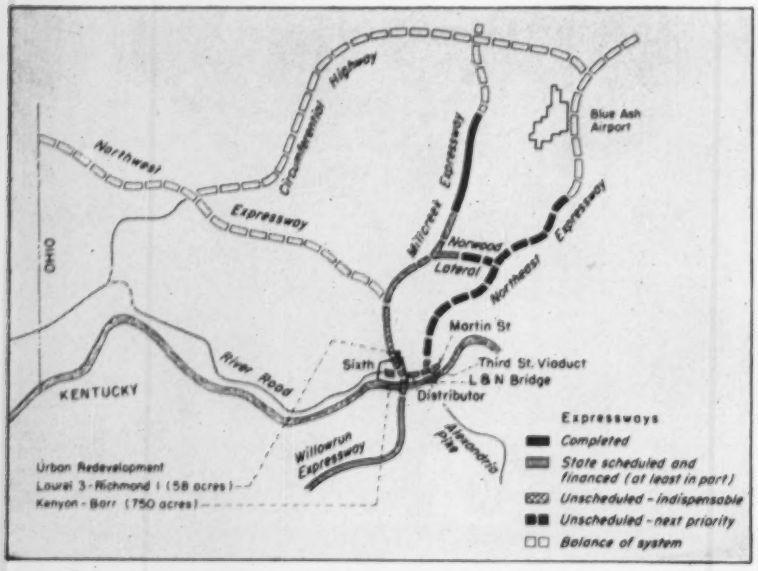




WEDGE-GRIP ASSEMBLY FOR ONE PAIR OF STRANDS



Cincinnati's planning pays dividends:

City's Road System Grows

Officials of Cincinnati have had reason to congratulate themselves and their citizens during recent weeks. Years of solid, painstaking planning of highway systems to clear traffic congestion in the city have begun to pay off—faster than anyone expected.

Reason for the payoff was in part the passage of new federal highway legislation (ENR July 5, p. 21) which will make funds for the work quickly available. But even before the bill had cleared Congress, more than $150 million of urban highway construction was completely planned or under way. Some $270-million more will be spent before the job is finished.

And the highway program is only a part of the general improvement program envisioned for Ohio's second city—a program tied together by the road network, but which will encourage slum clearance, improvements for the airport, public buildings and the like.

The highway work alone will include:

- A circumferential route skirting the rolling hills around the congested downtown area
- Three expressways knifing into the heart of the city
- A new bridge across the Ohio River.
- **Steps to progress**—Five major steps have been taken during the last 12 months to bring the expressway system into being, making the program the biggest undertaking in the metropolitan master plan.

Construction began last September on the $1.1-million series of approaches to the planned L. & N. bridge, the first portion of which is called the Third Street Distributor. Also started in September, was construction of a new section of the partly completed Millcreek Expressway, the principal north-south feeder into midtown.

A third step was made when the U.S. Bureau of Public Roads designated as part of the National System of Interstate Highways, the entire Northeast Expressway, all of the Northwest Expressway and key portions of the Hamilton County Circumferential Highway, in addition to portions of the system already mentioned.

The Northwest, Northeast and Circumferential expressways have been carried on the books as planned but not scheduled. But now that Congress has made funds available, the city considers itself set.

Cincinnati already has completed street line plats and preliminary engineering studies for the entire city portion of the Northeast Expressway.

Step four was the recent agreement on the site for the new six-lane L&N bridge across the Ohio River by officials of the state of Ohio and Kentucky, the cities of Covington, Ky., and Cincinnati, and the federal government.

The bridge will cost $12.6 million, including connections with the Covington Expressway on the southern bank. Connections and approaches on the Cincinnati side are estimated at $20.4 million. The $8-million Willowrun Expressway from Florence, Ky., to Covington also will tie into the bridge.

A fifth step was the progress made toward a start on the north-south Ohio turnpike, which will connect Cincinnati with Columbus and the Ohio east-west turnpike at Cleveland, and toward a Pennsylvania connection with the New York Thruway at Conneaut. Scheduling of this pike will expedite completion of the Cincinnati program.

Cincinnati's $277.1 million is its

$277.1 Million for Hamilton County-Cincinnati Area

Project	Location	Length (miles)	Cost (millions)	Scheduled
Third St. Distributor	(see map)	1	$17.1	1957-58
Millcreek Expressway	Plum St. to 6th St.	1	12	1957-59
	Mitchell Ave. to Paddock Rd.	2.5	11	1957
	Paddock Rd. to Shepard St.	4	16	1958-70
	Shepart St. to By-pass 50	2.5	4	1958-60
	6th St. to Ludlow Ave.	3.5	36	1957-60
Route 25	By-pass 50 to turnpike	4	8	1957-59
Northeast Expressway	Broadway to Elsinore Pl.	1	8	1958-62
	Elsinore Pl. to Dana-Vista Ave.	4	18	1958-65
	Dana-Vista Ave. to Montgomery Rd.	3.4	23	1958-67
	Montgomery Rd. to north	6	12	1958-67
	Montgomery Rd. to county line	47	46	1958-70
Route 52	Indiana line to By-pass 50	8	12	1957-59
	By-pass 50 to Cheviot	8	24	1958-63
Route 50	Cheviot to Millcreek	3.5	30	1958-65

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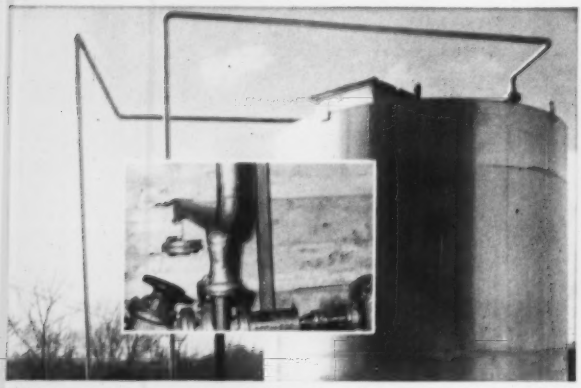
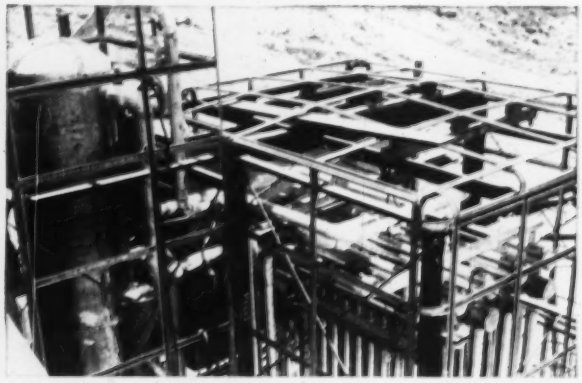
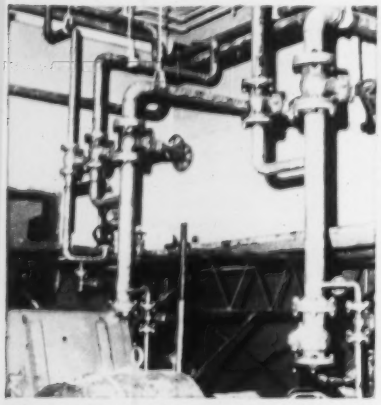


Oleic Acid Storage: Here, 2" aluminum lines carry oleic acid in this installation for a rubber company. TUBE-TURN Aluminum Welding Fittings are used for directional changes. Insert shows a compact combination of these fittings at a pump . . . an elbow, tee, reducer and flange.

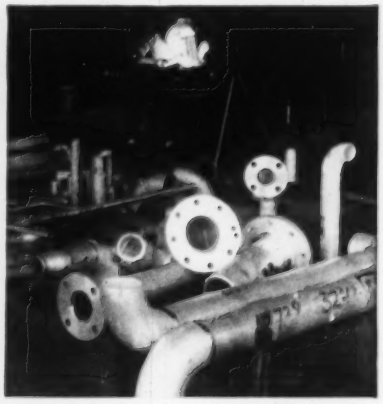


Oxygen Plant: TUBE-TURN Welding Fittings were used throughout this 25 tons-per-day oxygen plant for ore recovery. Here, operating temperatures range from 100°F to –320°F. Picture above shows reversing heat exchangers and fractionating tower prior to being enclosed in insulating shell.

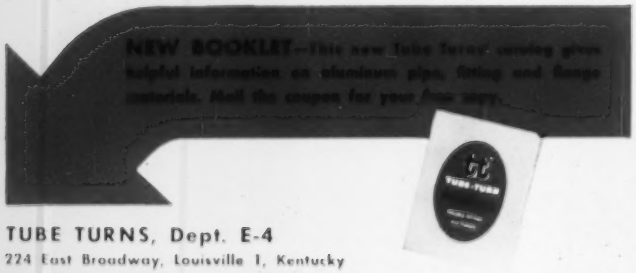


Catalyst Piping: Aluminum piping and fittings were specified for certain services in this new TCR bead catalyst plant to prevent contamination of the catalyst. TUBE-TURN Welding Fittings and Flanges were employed in all aluminum lines from 1" to 10". Result: Lines are permanently leak-proof – maintenance is minimized.

Refinery Wax Coils: Originally, retubing of seven wax sweaters in a large refinery called for coils of another metal. Switch to aluminum piping and TUBE-TURN Welding Fittings saved $50,000 in material costs! Each unit required 900 TUBE-TURN 180° Welding Returns of 1" OD.



Fast Fabrication: TUBE-TURN Welding Fittings and Flanges are dimensionally accurate. Rigid inspection by Tube Turns assures true circularity and uniform wall thickness. Result: Alignment is perfect; fabrication is faster; installation simplified.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share of $1.85 billion that the state highway director, Samuel O. Linzell, has slated for expenditure under a long-range state plan backed by the forthcoming federal appropriations. The state's share under the first three years of the Congress-approved program is $275.2 million).

• **Far-reaching effects**—Almost all the city's master plan projects will be directly affected by the expressway program. Of more than $250 million that will be spent on Cincinnati's many projects, only the $76-million Markland Dam, just started downriver from the city, will not derive some marked benefit from the program. The dam, eliminating several existing dams, is being constructed to improve Ohio River traffic.

Already started, under a $4-million federal grant, is the first step in an ambitious urban redevelopment program. Being cleared is a 58-acre slum area known as Laurel-Richmond I, which straddles the approach to the Cincinnati Union Terminal. This project will act as a pilot operation for redevelopment of the 750-acre Kenyon-Barr project, next in priority.

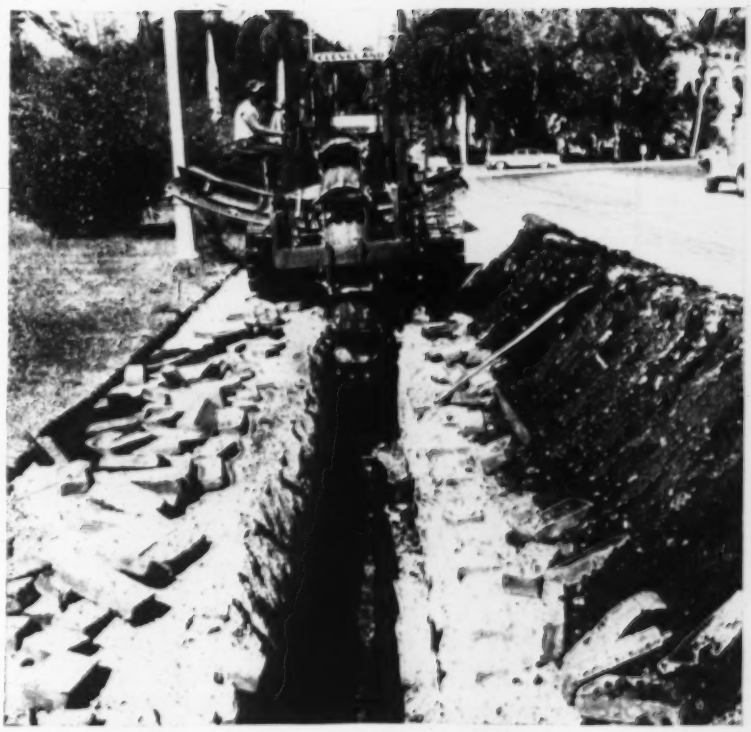
Both projects are situated at the very hub of the expressway system, making them highly desirable properties when cleared of blight and offered for sale to private interests, who will redevelop them in accordance with a community plan for the area.

Not only is the city going ahead with six off-street parking facilities as recommended by DeLeuw-Cather & Co., Chicago consultants, but there also are plans for deck parking above the Third Street Distributor, major expressway network feeder.

Blue Ash Airport—considered a must for the future despite the fact that it was turned down by voters on a $6-million bond issue last November—will be served directly by the Northeast Expressway. The city has acquired most of the necessary land for the airport, claiming it is only a matter of time before it must be built.

Acquisition of rights-of-way for the expressways and redevelopment of the central areas have displaced some prime industries, forcing reconstruction in both downtown and fringe areas. The expressway layout has been a major factor in choice of locations.

Also fostered when the system has been completed, will be the successful operation of works now being constructed under a $150-million, five-year capital improvement program and location of a planned civic center that will include a city hall, federal building, state building, convention hall, underground parking and stores, at a site yet to be firmly established.



Model 140 Cleveland Trencher helps get $14,000,000 sanitary sewer construction program underway in St. Petersburg, Fla.

The Cleveland Trencher Model 140 shown above—one of three Clevelands currently being operated by Richards Constructors of Andalusia, Ala.—is completing a 400-foot run of trench on Snell Isle Blvd. in St. Petersburg. 8-inch cast iron pipe is being installed here for lift pump lines. Richards really had "trench on tap" for this job because of the exclusive wide range of digging speeds provided by his 140. This allowed him to open up just the trench footage needed at any time to meet the pipe gang's requirements. When more trench was needed, the speed to produce it "right now" was available in the Cleveland's reservoir of speeds—a reservoir of more than 33 usable combinations of digging wheel and crawler speeds, ranging from 6 inches to over 37 feet per minute.

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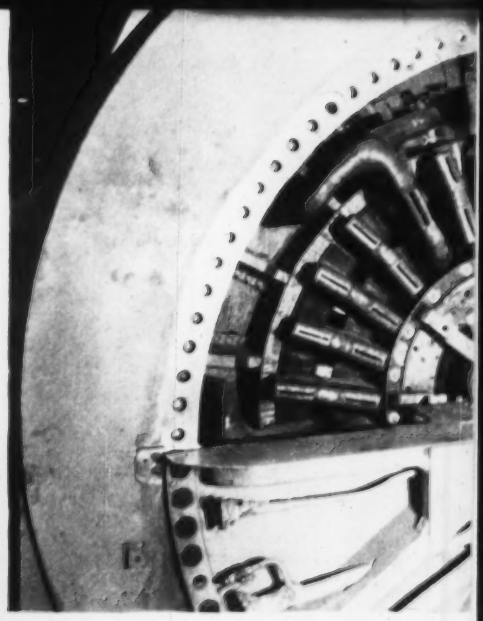
The second 250-mw unit in TVA's now formidable steam-power system is nearly ready for operation. In its modernity and size of units, Gallatin Steam Plant is the ultimate to date.

SINGLE STACK serves Gallatin's two initial units. An ultimate ten units are planned.



COOLING AFFECTS SIZE. Hydrogen cooling shown in generator stator is an

TVA's Latest,

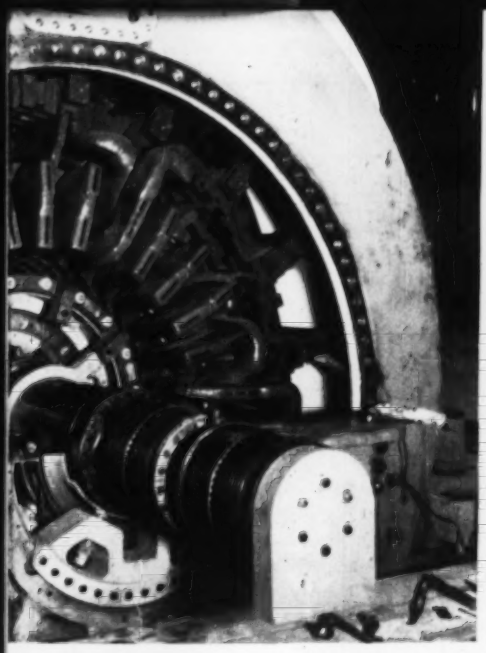
Corydon W. Bell
Civil Engineer
Tennessee Valley Authority

Gallatin Steam Plant, with the second of its two 250 mw units just about to go on the line, is an embodiment of most of what is new in thermal power plant design. For the Tennessee Valley Authority it represents a culmination of a postwar steam-power building program (ENR Feb. 25, 1954, p. 30) that has totaled 6,500 mw in seven plants, of which Gallatin was the seventh started.

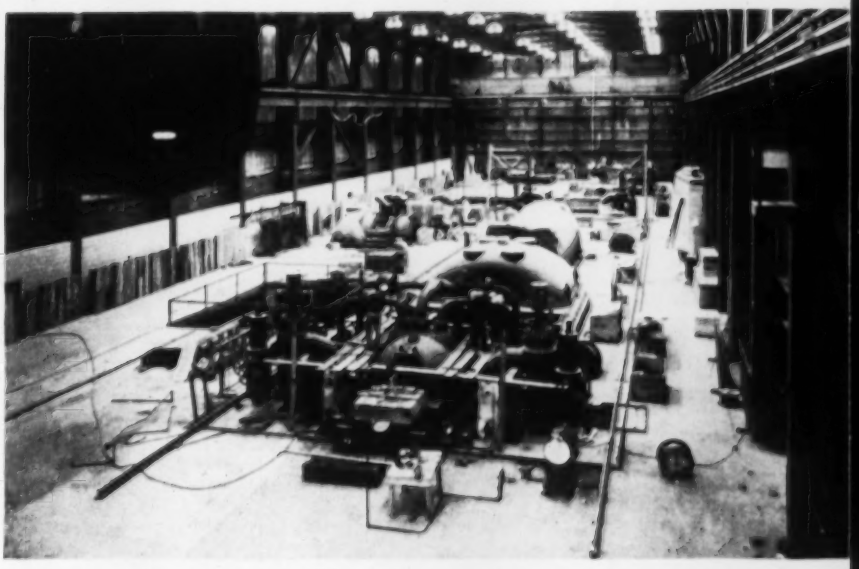
Designed for an eventual ten units, the Gallatin plant is on the Cumberland River 20 mi northeast of Nashville, Tenn., upstream from the nearly finished Old Hickory Dam.

Gallatin leads the trend to units of increasing size with resulting increase in efficiency and decrease in operating expenses. With an expected net plant heat rate of 9,294 Btu per kwh (at 2 in. Hg abs exhaust pressure and 250 mw output) it will be one of the most efficient plants in the world. Operating conditions of 2,000 psig and 1050/1050 F are the highest yet utilized in the TVA system.

As in the design of all steam plants constructed by TVA, the unit system of one boiler per turbine was utilized at Gallatin. However, at Gallatin, the turbogenerators are placed end to end instead of perpendicular to the powerhouse axis since boiler width still controlled spacing of the units. A reduction of some 30 ft of turbine room



advance that has meant increased capacity without proportionate growth in size.



SIZE AFFECTS LAYOUT. Units get big enough for designers to find economy in placing them end-to-end, permitting a shorter-span turbine-room bay.

Biggest Pair of Units

width resulted; building and crane savings are readily apparent.

• **Generators**—Recently, substantial reductions of the physical size and weight of generator components have been achieved through more efficient equipment for removal of the heat produced by current flow through generator conductors. Gallatin make a notable contribution by the use of inner-cooling in both the rotor and stator windings. Foundation size, building space, and crane capacity economy resulted because these generators are 110 in. shorter and 263,000 lb less in weight than a comparable conventionally cooled generator of equal rating.

This is even more dramatically expressed through a comparison of the 250-mw Gallatin units with the smaller 200-mw conventionally cooled units of Colbert Steam Plant (near Wilson Dam in Alabama). Gallatin rotor and stator weights are 91,000 lb and 550,000 lb, respectively, while the Colbert weights are 108,800 lb and 636,800 lb. Yet the Gallatin units have a 50-mw higher rating.

These 24,000-volt machines operate with a hydrogen pressure of 30 psi, at 250,000-kw capability. Nameplate capacity is 250,000 kva and 225,000 kw, 0.9 pf. The 900-kw main exciter is direct connected and turns at 897 rpm. A magamp type motor-driven pilot exciter is used instead of the usual direct connected type. Rated at 13 kw, 125 volts, and 420 cycles, these exciters allow better control, resulting in much faster response to changes in the system generating conditions.

• **Turbines**—Each generator is driven by a three-cylinder, tandem-compound, triple-exhaust, 3600-rpm, condensing, reheat turbine having a guaranteed capability of 250 mw at a back pressure of 2 in. Hg abs. The two turbines are the largest single-shaft machines installed to date. Operating conditions are 2000 psig and 1050 F reheat to 1050 F at 390 psig. Steam expansion in the turbine progresses through 32 stages of which eight are extraction stages for feed water heating purposes.

Steam flows through the turbine from two separately mounted steam chests and their respective throttle valves. It encounters two impulse velocity stages and 14 reaction pressure stages in the high-pressure cylinder prior to exhausting through two cylinder base openings and passing to the reheater. Reheated steam is introduced into the turbine through two base and two cover openings in the intermediate-pressure cylinder and continues expanding through one impulse and eight reaction stages in the intermediate-pressure turbine high-pressure section. At the 9th intermediate-pressure stage two-thirds of the steam is conducted out of the cylinder base through two cross-under conduits to the low-pressure turbine. The remaining steam continues through the seven low-pressure stages of the intermediate-pressure turbine. The low-pressure turbine contains a double-flow seven-stage section. All three low-pressure sections exhaust into a common condenser neck.

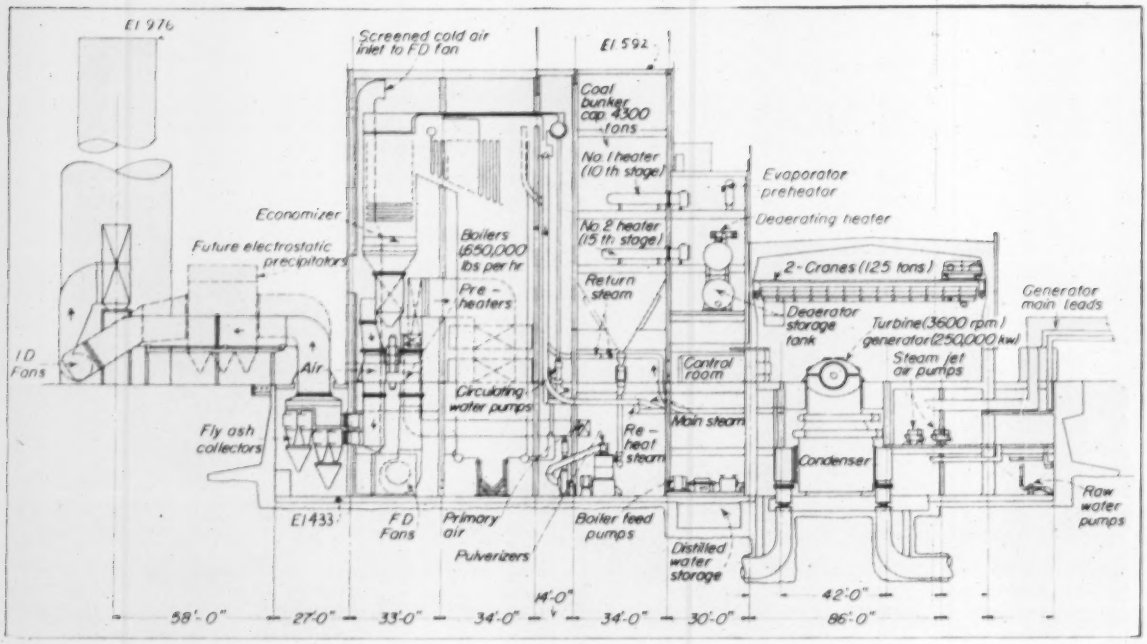
The 32nd-stage wheels are 8 ft 4 in. in diameter. A point on the shroud band travels at the rate of 1070 mph. Five journal bearings support the three-section, 120,000-lb rotor. High-pressure glands are steam-labyrinth sealed and the low-pressure are water-labyrinth sealed. A gland steam condenser is utilized. The turbine weighs about 750,000 lb.

At 250 mw and 2 in. Hg abs the guaranteed turbine heat rate is 7,765 Btu per kwh for a gain of 8.5% over the first post-war plant built by TVA.

In a conservative approach to pressure and temperature selections, an increase to 1,100 F from 1,000-1,050 F at previous TVA plants was rejected because of (1) limited operating experience in that range, and (2) a requirement for austenitic steels. At 1,050 F ferritic steels still could be used. Selection of a reheat temperature of 1,050 F was based primarily on the very favorable results obtained at TVA's Colbert Steam Plant. On the steam pressure question, an increase to 2,000 psig from the previous high of 1800 psig was a logical step.

It is of interest to note that utilization of the reheat cycle brings about a 4 to 5 % increase in fuel economy, not to mention the reduction of the size of condenser, pumps, and related equipment. A second reheat cycle would not have been economical because of the relatively low fuel costs.

(Continued on page 54)



EQUIPMENT AND ITS PLACEMENT show in sectional view through plant. And it's all run by ten men per shift.

• **Circulating water**—It was possible to install conventional single-pass divided water box condensers. The units are rated to condense 1,120,000 lb steam per hr at 2 in. Hg abs with 144,200 gpm circulating water at 73°F supplied by two vertical mixed-flow pumps which are rated at 77,000 gpm each at 19 ft head.

River water reaches the pumps by way of an intake channel and discharges to a similar channel on the opposite side of the plant. Passage to and from the condenser is through 8-ft dia concrete-lined tunnels located 72 ft below grade in solid rock. Tunneling for these conduits was done at a considerable saving over surface excavation and backfill methods. A skimmer wall at the intake channel mouth allows only the deeper and cooler water to enter the channel. (ENR Mar. 18, 1954, p. 47).

Intake channel design anticipated a normal pool level to be provided before initial operation by the closure of Old Hickory Dam. Construction delays at the dam will make it necessary to pump water into the channel from the river.

• **Boilers**—At Gallatin, steam generators are twin-furnace, controlled-circulation, tangentially fired units which produce 2,030-psig, 1053°F steam at a continuous rating of 1,650,000 lb per hr and guaranteed efficiency of 88.5%. These large twin-furnace units (the reheater is located in one furnace and the final superheat section in the other) present some startup and operating problems, but the advantages of this type of design far outweigh the problems encountered.

• Control of the temperatures is possible in each furnace separately. This amounts to better and more economical control of the final superheat and reheat temperatures.

• The square furnace shape, which allows more effective tangential firing, can be retained in the twin-furnace design.

• A twin furnace permits the use of a center support column between the furnaces, thereby reducing the size of support girders and other framing members.

• Soot blowers in a single wide furnace would reach such lengths as to become uneconomical to use.

Since TVA uses large quantities of coal, it is advantageous to be able to burn any type of coal that is currently available. For this reason the furnaces are the dry-bottom type, and it is not necessary to limit purchases to low-ash-fusion coal. Furnace walls are all welded design and were erected in panels which simplified erection considerably.

Three induced and three forced-draft fans are used per unit; one 25-ft ID (at the top), 500-ft-high, reinforced concrete brick-lined stack serves two units. Each unit utilizes three cyclone-type fly ash collectors, and both fly ash and bottom ash are sluice-pumped to a yard disposal area. There is provision for future electrostatic precipitators.

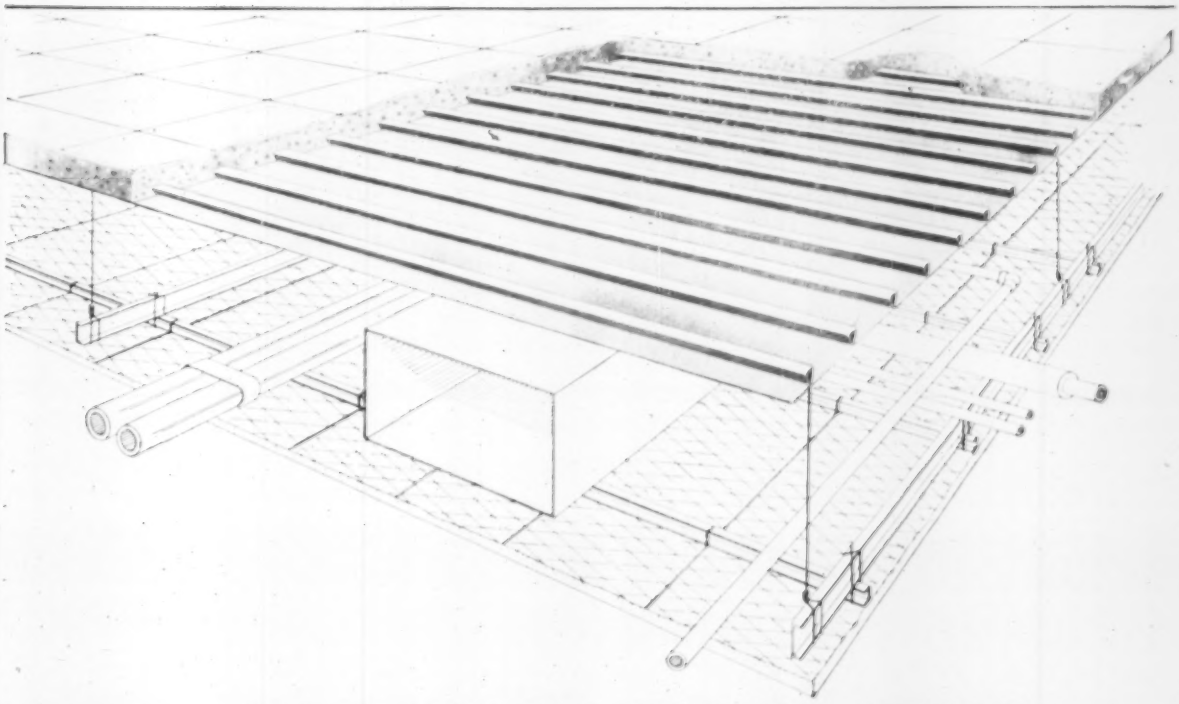
• **Controls**—All principal electrical (except switching) and mechanical control functions are located in a central control room which serves both units. Instrument grouping is such that the room size is kept as small as is practical. This planning has the direct effect of reducing the number of operators required to a minimum. Each shift requires only 10 men to supervise and control boiler, turbogenerator, and auxiliary operations for the two units.

Coal for Gallatin will be drawn largely from the west Kentucky fields. Based on an 80-percent load factor, the annual consumption for two units will be 1,400,000 tons. Consumption per hour per unit at rated load will be 99.5 tons.

• **Costs**—Estimated final cost for the two-unit plant is $76,994,000, or $154 per kw of installed capability, less the switchyard. Total costs, including the switchyard, will be $81,500,000, or $163 per kw of capability.

Planning, design, and construction of the Gallatin Steam Plant are under the respective direction of Messrs. J. S. Bowman, R. A. Monroe and C. K. Leonard. A. H. Weber is the Project Manager and the Construction Engineer is J. R. Rountree. All function under C. E. Blee, chief engineer of TVA.

New *Fenestra* design idea for hospital corridors



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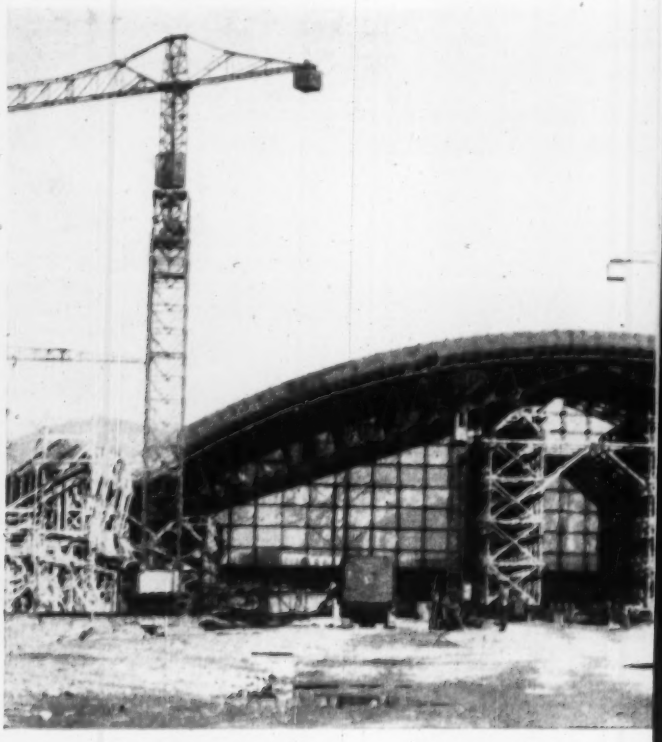


Giant Louvers are reinforced concrete arches in exhibition palace under construction at Nice, France. Short members between arch ribs are frames for translucent plastic panels (not installed when photo was taken). Rectangular pattern above arches is a bracing grid of 6x6-m. reinforced concrete members.

Concrete Louvers

A concrete roof span said to be the largest in Europe, arches above the exhibition palace now being completed in Nice, French Riviera resort town. Further distinguished by its claim of being the continent's biggest building, the palace is 305x492 ft overall. It will cost nearly $3 million.

The record span, c-c of the arch supporting buttresses, is about 285 ft at floor level and 226 ft between the cantilever tips of the buttresses.

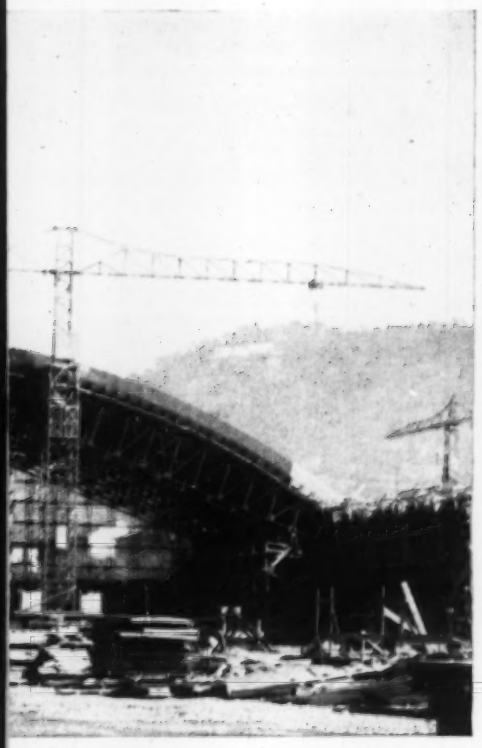
The main purpose for the new exhibition hall is to provide a permanent location for Nice's annual trade fair. Heretofore, the event has occupied three inadequate temporary buildings. But city officials also hope to attract sports events, conventions and other expositions, particularly during the winter off season. Besides the vaulted hall, the project also includes conference and work rooms, dressing rooms and administrative offices.

Inspired partly by Italian engineer Pier Luigi Nervi's design for the Valentino Palace in Turin (ENR Jan. 4, 1951, p. 46), Richard and Michel Laugier, architects for the new building, designed the roof as a series of giant corrugations, with a 9-ft 10-in. pitch and 7-ft depth. One inclined face of each corrugation is reinforced concrete. The other is openwork glazed with translucent plastic panels. The entire structure is overland with a grid of 6x6-m. reinforced-concrete members. They span from peak to peak of the corrugations on a 45-deg skew and brace against racking forces.

The plastic panels face north, to admit light while blocking direct sunlight. Similarly, the north wall of the building is glazed with translucent plastic, while the south elevation is a concrete curtain wall. Artificial light sources include fluorescent tubes set in reflectors mounted on the underside of the corrugation peaks. Supplementary lighting can be plugged into outlets installed on the ribs.

Another unusual feature of the palace is the fact that it bridges a watercourse, the Paillon. (The stream, however, nearly dries up in the summer.) It flows through seven 39-ft channels under the building. Channel separators are the foundation walls of a 185,000-sq-ft reinforced concrete platform that serves both as the floor of the exhibition hall and as support for a landscaped area outside.

The building will be heated by ra-



Barrel Arches were cast in five full-span pours. Platforms supporting falsework trusses were on trolleys to facilitate shifting of the falsework between pours.

TOP VIEW reveals one of the concrete ribs after forms have been partly stripped off. For lateral stiffness, lower edge of the rib was cast with a turned-up flange (arrow) and the top edge with a turned-down flange (not visible in photo). One bay of the crisscross bracing members appears in photo.

Arch 285 Ft

diant hot-water panels embedded in the floor. The panels contain 33,000 ft of pipe. The water is heated by electric heaters during off-hours and stored until needed. Automatic controls regulate the flow.

The huge roof structure was cast in five full-span pours on movable falsework. Forms for the concrete ribs were supported by wood-decked steel bowstring trusses. Each truss bent consisted of two trusses, sloping up from the ends of the bent to meet in a tandem connection at the center of the arch. Four trolley-mounted wood-frame towers—one each side of the building center, the other two along the ends of the bents—supported the trusses. Total weight of the centering structure was 396 tons.

The project required 10,500 cu yds

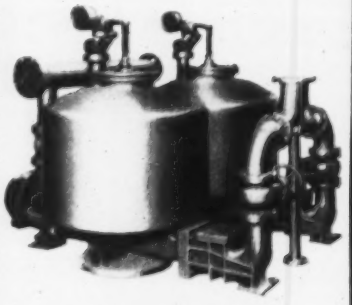
FINISHED BUILDING is represented in this inside view of scale model. Span between cantilevered buttresses is 285 ft at floor level, is said to be European record.

for handling domestic and industrial wastes, pneumatic ejectors are better. . and. .

THERE'S A YEOMANS PNEUMATIC EJECTOR SPECIALLY SUITED FOR YOUR JOB

WHY PNEUMATIC EJECTORS?

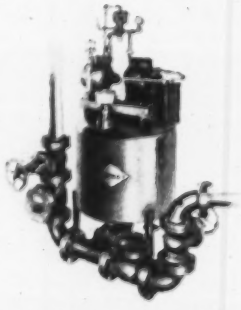
1. **Best for low gallonages.** Centrifugal pumps are efficient in larger sizes . . but for low gallonages they are inefficient. Flow is restricted . . impeller aperture is too small to pass certain solids.
2. **Completely sanitary . . odorless.** Pneumatic ejectors are fully enclosed, hermetically sealed. Liquid wastes are never exposed to atmosphere. Dangerous, asphyxiating, hydrogen sulphide gas is never released.
3. **Trouble-free.** Pneumatic ejectors have relatively few working parts which move neither fast nor far. Operation is positive. Maintenance problems are almost nonexistent.
4. **Handles solids easily.** Pneumatic ejectors will pass solids up to the size of the inlet and discharge valves . . minimum of four inches.



THE Shone®

WHY YEOMANS PNEUMATIC EJECTORS?

1. Yeomans builds ruggedly . . to outlast the system itself.
2. Yeomans builds the only complete lines of pneumatic ejectors . . more than 100 sizes in three basic types . . the Shone . . the Expelsor . . and the Packex.
3. Yeomans offers equipment in a price range for every application.
4. Yeomans *knows* pneumatic ejectors . . in fact, the first pneumatic ejector installed in America was a Shone.



THE PACKEX®

Free literature on pneumatic ejectors:
Catalog 4304 describes the electrode-controlled SHONE . . 4005, the mechanically controlled SHONE . . 4107, the EXPELSOR . . 4120, the PACKEX. Copies available on request.

YEOMANS

1999-1 N. Ruby Street, Melrose Park, Ill.

. . . manufacturers of: pneumatic sewage ejectors • centrifugal pumps • distributors • clarifiers • mechanical aerators • digesters.

of excavation, 9,000 cu yds of concrete and 1,100 tons of reinforcing steel.

Architectural design of the palace was executed by Richard and Michel Laugier. Consulting engineers were Pelnard and Considere. Thorrand & Co. and Robert Frères hold the general contract.

Britain Will Span Mersey With a Record Steel Arch

A $5.6-million bridge incorporating the longest steel arch span in Britain will replace an old transporter bridge (traveling deck or ferry suspended from tracks on overhead trusses) that has carried road traffic for 45 years over the Mersey River and the Manchester Ship Canal between Runcorn, Cheshire, and Widnes, Lancashire.

A main span of 1,082 ft with a 275-ft truss span at each end will give the bridge an overall length of 1,632 ft. Approach viaducts, spanning 70 to 90 ft between piers, will extend the roadway another 1,425 ft on the Runcorn side, 780 ft on the Widnes bank. The deck carries a 33-ft roadway and a 6-ft walk.

Originally planned as suspension type, the bridge was redesigned as a high-level arch after wind-tunnel tests on a scale model of the first design showed it to be unsatisfactory. The tests indicated that an existing railway bridge nearby would have caused the prevailing wind to buffet the suspension span in such a way as to produce oscillation.

Costs Will Be Shared on Ottawa's $31-Million Highway

With an accord on cost sharing, the way has been cleared for construction of the 19-mi, $31-million Queensway limited-access highway through Ottawa. An abandoned railroad right of way will take the new road through the center of the city, to become a connecting link in the Trans-Canada Highway east and west of the city.

The original estimate of $20 million was upped on the basis of a construction cost estimate of $17 million and a right-of-way cost of $14 million.

Of the construction costs, the provincial government is to provide $8.5 million, the federal government $8.5 million, and the city, $5 million. Right of way costs are to be split between the city and federal governments on an as yet undetermined basis, although the Federal District Commission has donated the $8 million right of way, leaving only $6 million to be apportioned.

Construction is set for spring 1957.

DIGS A NEW LAKE IN 30 DAYS!

That's the record of this Bucyrus-Erie 1½-yd. dragline for Colorado contractor

Said Pioneer's operator of this dragline: "I have run many and like the 38-B best."

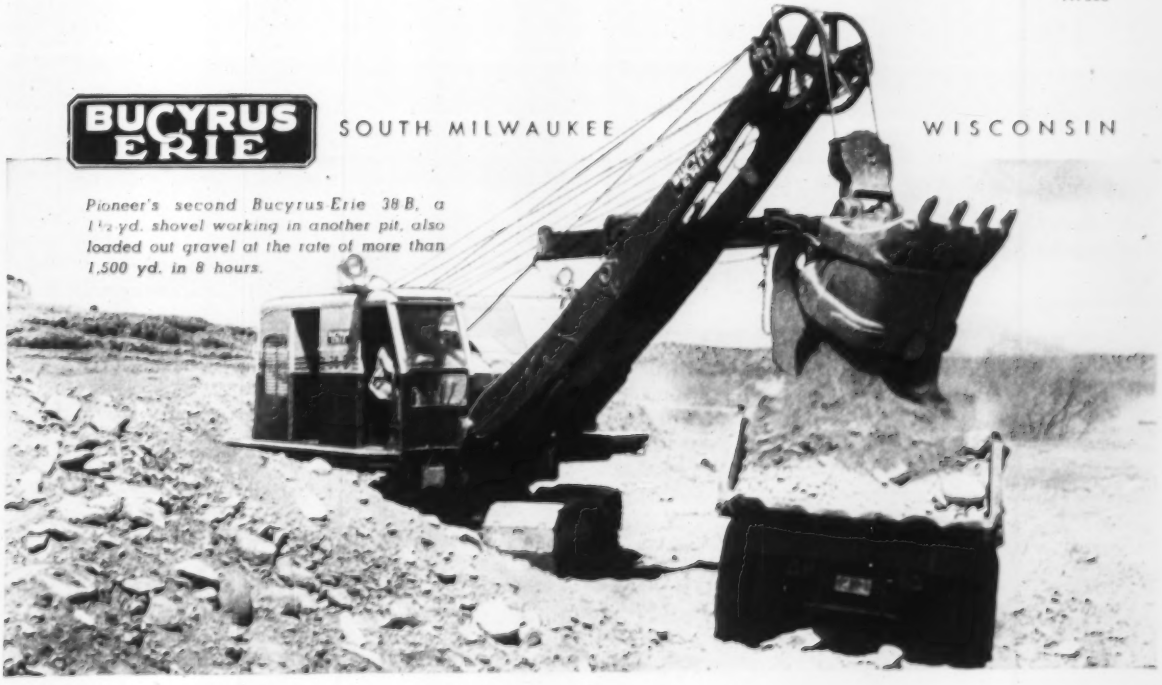
On a new highway near Monte Vista, Colo., the Pioneer Construction Co., Pueblo, Colo., excavated and loaded 45,000 cu. yd. of alluvial gravel in 30 days with a Bucyrus-Erie 38-B dragline. The excavation site is now a lake well stocked with fish.

The Pioneer Construction Co. was formed in January, 1955. Its growth reflects the wide experience and sound policies of the key men. They believe it takes the best of modern equipment, efficiently operated and properly maintained, to stay in business in contracting. Their experience with two Bucyrus-Erie 38-B's, one rigged as a dragline and the other as a shovel, has proved out this policy. These machines offer good production ability, and they are operated and maintained in a manner to provide economical performance.

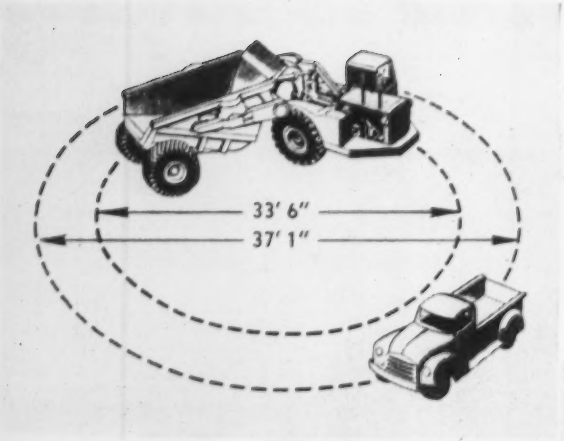
Let your Bucyrus-Erie distributor give you complete details on these modern excavators — ⅜ to 4 cu. yd. — and show you how they can help bring top efficiency to your operations.

19TE56

BUCYRUS ERIE SOUTH MILWAUKEE WISCONSIN



Pioneer's second Bucyrus-Erie 38-B, a 1½ yd. shovel working in another pit, also loaded out gravel at the rate of more than 1,500 yd. in 8 hours.



Athey PR21
TURNS SHORTER
than ½-ton pickup truck

Morrison-Knudsen, Inc. had some narrow ledge work on a railroad relocation job near The Dalles, Oregon. The work required a really sharp-turning, easily handled unit, "Short-turning Athey Rear Dumps solved our problems in cramped quarters," said E. B. Potter, Project Manager.

Tight turning means top production . .

Take a ledge only 34 feet wide in places. Put a 2½ yard shovel on it. The space "left over" is for the hauling unit. That's the problem Morrison-Knudsen faced. The Athey PR21 Rear Dump Trailer supplied the answer.

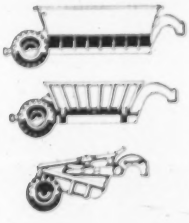
Large trucks couldn't do the job because they couldn't turn around without complicated back-and-forth maneuvering. The PR21, however, drove in, swung around once, backed under the shovel. No lost time! In fact, the PR21 can turn in less space than a small pickup truck as the sketch at the top shows.

But a short turning radius is not the only outstanding feature of the PR21. It's built to handle big, tough rock or any abrasive material. Hydraulically controlled throughout, one lever dumps the load. The large body is clean and uncluttered — material discharges quickly and cleanly. With the load cradled down between the wheels and the tractor driver wheels well away from the edge of fill or dump, safety is assured. Most important, the PR21 is designed for profitable performance in tough work day after day with a minimum of down time and a maximum of profit time.

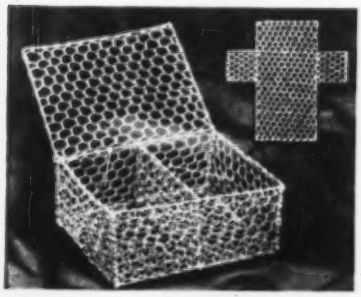
Check into the Athey PR21 today! Get all the facts on the trailer that's proved itself a top producer all over the world. See your Athey-Caterpillar Dealer for all the facts.

ATHEY PRODUCTS CORPORATION, 5631 West 65th St., Chicago 38, Illinois

Athey



world's finest rubber-tired trailers!



Wire baskets filled with rocks . . .

. . . and tied together, form

Gabion Bank Protection

Gabions—large wire mesh baskets to be filled with loose stone and used in the construction of groins, retaining walls and other river works—are now being marketed in this country. Their use dates back to the early 1890's in Italy on installations that are still in place.

Individual baskets are set in place, wired together and then carefully lined with large stone—this step a hand operation. Balance of the filling may be by hand or by a "sieve" dragline. Each unit of the "gabionade" is completed by folding down the top of the basket and wiring it shut. Where more than one layer of gabions is called for, vertical faces of adjacent layers are staggered to add strength to the structure. No skilled labor is required.

The big advantage of gabionade installations is their flexibility. They remain integral under extreme movement or erosion of supporting and surrounding material, settling in a new position to prevent further erosion. Thus, gabionades are never grouted.

Recent projects employing gabions include the Lawe River flood control works in South Wales, Great Britain. Gabions are used there for bank protection and groines and have been praised highly by the chief engineer on the job. Gabions have also been employed recently in Grenada, British West Indies, along the Po River in Italy and in several Canadian rivers.

The wire baskets are also applicable for constructing control weirs, bridge abutment protection, retaining walls and cut-off drains. Gabions are available in sizes ranging from 6½ x 3¼ x 1½ ft to 13 x 3¼ x 3¼. Mesh sizes range from 2 x 2¼ in. to 4 x 4½ in., and wire gauges from No. 15 to No. 18. Construction is of steel wire with special coatings available for salt water use. River and Sea Gabions, Inc., 55 W. 42 St., New York 36, N. Y.

Centrifugal Governor Limits Speed of Revolving Door

A centrifugal governor is the heart of a newly developed speed control for revolving doors. The control can be used, according to the manufacturer, on revolving doors of any type, make or age and can be set at any speed up to 12 rpm. At normal speeds, the device has no effect on door motion. But when door speed reaches the limit at which the governor has been set, friction plates engage with a braking effect.

The mechanism is said to be simple and easy to regulate. Most working parts will last for years. Those that wear faster, such as brake bands, are replaceable without holding up door operation.

Conventional installations are overhead, but floor-type controls can be used for floor-supported doors and those with limited room overhead. International Steel Co., Evansville 7, Ind.

Durable Magnesium Levels Are Shaped Like an I-Beam

In introducing a new line of levels, the manufacturer states they were engineered from suggestions volunteered by carpenters, masons and general contractors, as to what they desired in an ideal level. The new line of products consists of a level made of magnesium that has been extruded into an approximate I-beam shape but with the flange edges lipped for added rigidity. Sides are beveled.

Bubbles are contained in Pyrex vials mounted in anodized brackets. Not only are the vials said to be highly resistant to shock, but the manufacturer states they are impervious to light and temperature as well. Vial assemblies can be purchased for 50 cents each and can be installed on the spot with a screw driver.

In cross section the levels measure 1¼ in. across the flanges, are 2½ in. deep. They come in assorted lengths to fit any span of jamb—96, 84 and 78-in. lengths with ten vials; 72, 48, 28 and 24-in. lengths with six vials. Simplex Level Co., Inc., Box 329, Dept. 461, Jackson, Mich.

Swivel Base Simplifies Handling of Mobile Hoist

A swivel base that makes it easier to tow and erect the Lad-E-Vator mobile hoist is now being produced by the manufacturer of that equipment.

The new base, called Trail-Erector, can swing in a complete circle and when the hoist is properly positioned locks to dump materials at working level.

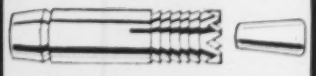
A motor, either gas or electric, is mounted on the Trail-Erector platform. When the unit arrives at the construction site, the swivel base is released, swung to position and locked; leveling legs are dropped, and the motor quickly pulls the Lad-E-Vator up to proper level.

When the unit is to be moved to another job, the tower is lowered, locked in place and swiveled around to traveling position. Then, the tower is tilted down almost to horizontal position, leaving clearance for the towing vehicle. Campbell Equipment Co., Chicago, Ill.

(New Products continued on page 62)

CUT COSTS ON ALL FASTENING JOBS

All Steel-Fireproof-Safe



. . . drills its own hole!

With Original PHILLIPS SELF-DRILLING EXPANSION SHELLS

- SAVINGS—No drills to buy—time saving, each anchor drills its own hole.
- SAFE—Non-explosive — highest holding power.
- FAST—Impact power installed in seconds.
- EASY—No manual labor—no effort—clean.
- TESTED—50 million installed over 30 years. U. L. & FM approved.
- FIREPROOF—All steel—no lead to melt or creep.
- VERSATILE—All sizes and types for every job. Not preset—install where and when needed.

Write for COST SAVING DETAILS

PHILLIPS DRILL CO.

Dept. 6, Michigan City, Indiana

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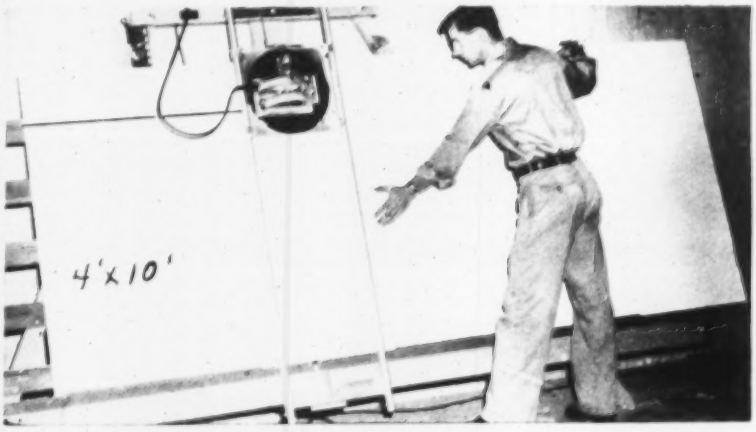


Panel Saw Has Guide for Big Sheets

The Bennett Two-Way Panel Saw is a 12x6½x2-ft portable rig designed to simplify accurate, on-the-job ripping or crosscutting of large sheets of material like plywood and masonite. In operation, the wood frame—which comprises the length and height of the rig—leans against a wall or other support with the 12-ft dimension along the floor and the 6½-ft dimension nearly upright. The saw itself slides on a pair of tubular steel guides running from top to bottom of the frame.

A stock sheet to be sawn is laid flat against the face of the frame, the lower edge of the sheet supported by a projecting ledger along the base of the rig. With the saw fixed at the required height above the base of the frame and the blade set parallel to the base, the stock sheet is moved across the frame to be cut horizontally. For a vertical cut, the sheet remains stationary while the saw, swiveled 90 deg on its turntable, is drawn downward.

The entire unit weighs 140 lb. Richard C. Bennett Mfg. Co., Lacey ville, Pa.

Prefab Panels Cut Concrete Forming Cost

Concrete-form panels prefabricated from ¼-in. thick plywood and designed for fast assembly and disassembly are now on the market after a three-year test period.

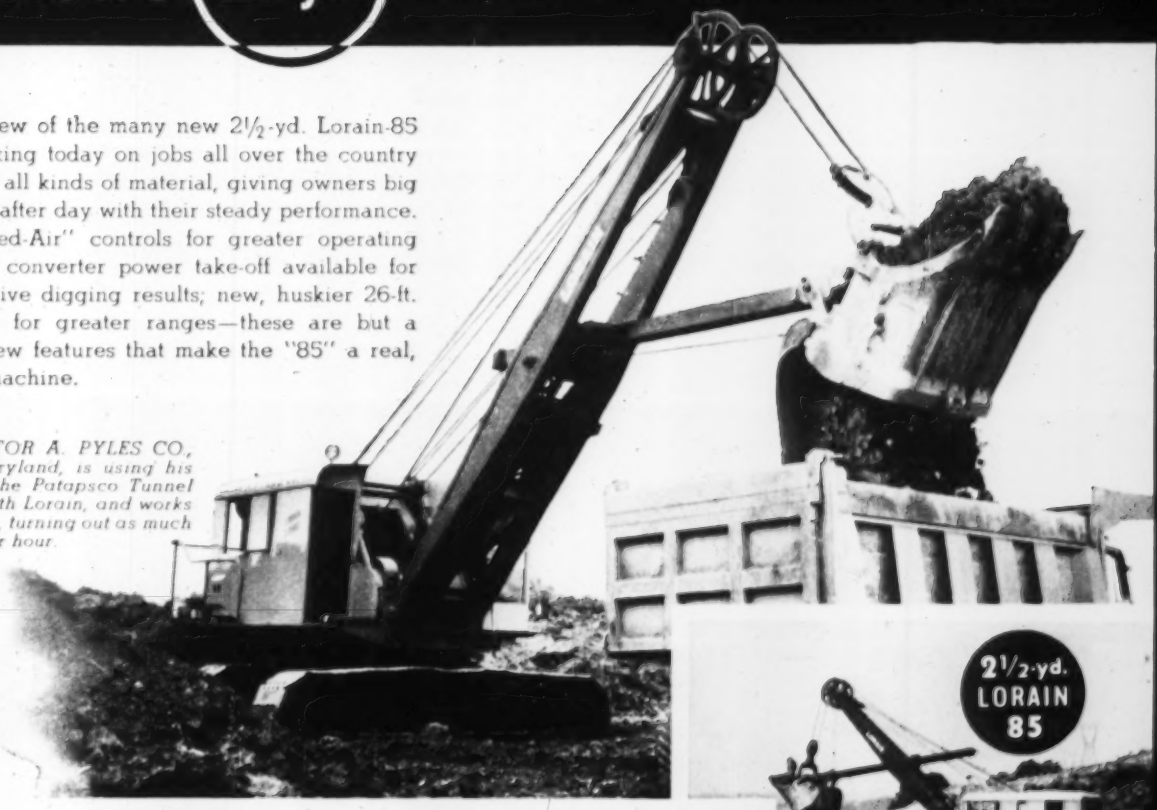
Secret of the quick construction is the hardware. Panels are edge-joined by steel clamps or straps bolted to countersunk metal sockets in adjacent panel faces. The clamps are slotted for snap ties. The sockets are Phillips-head bolts, bored and tapped longitudinally from the head end for the clamp-fastening bolts and secured to the plywood by countersunk nuts at the shank ends. All hardware is rust-resistant.

The panels weigh about 3 psf. They are interchangeable, with no distinction between right and left or top

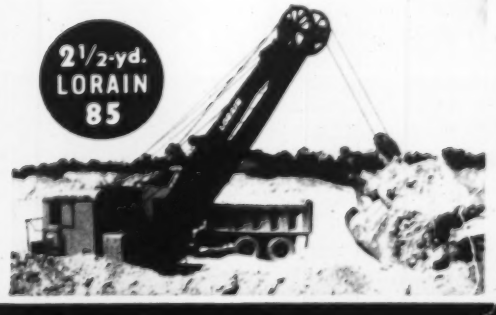
Job Views 2½-yd. LORAIN-85 SHOVELS at work

Here are a few of the many new 2½-yd. Lorain-85 Shovels working today on jobs all over the country . . . handling all kinds of material, giving owners big yardage day after day with their steady performance. New "Metered-Air" controls for greater operating ease; torque converter power take-off available for most productive digging results; new, huskier 26-ft. shovel boom for greater ranges—these are but a few of the new features that make the "85" a real, heavy-duty machine.

At right, VICTOR A. PYLES CO., Baltimore, Maryland, is using his Lorain-85 on the Patapsco Tunnel job. It's their 6th Lorain, and works 20 hours a day, turning out as much as 300 yds. per hour.



C. J. LANGENFELDER & SONS, INC., Baltimore, Md. own 2 Lorain-85 Shovels. Above, one is working near Auburn, Mass., on their 3,300,000 yd. grading contract on the Massachusetts Toll Road. Below, the other is shown digging and loading borrow in Baltimore. Langenfelder has purchased a total of 26 Lorains.



EMIL ANDERSON CONSTRUCTION CO., LTD. used his 2½ yd. Lorain-85 Shovel to dug a diversion tunnel on the Cheakamus Hydroelectric Development Project for the British Columbia Electric Co., Ltd., Vancouver. This is Anderson's 6th Lorain.

LYCOMING CONSTRUCTION CO., Williamsport, Pa., handle tough digging with their 2½ yd. Lorain-85 Shovel on a curve and grade elimination program on Pennsylvania Route 11. Another of Lycoming's 85's works as a crane on a ¾ mile long bridge construction on the same job. This is Lycoming's 17th Lorain.

THE THEW SHOVEL CO.
LORAIN, OHIO

CHAS. CAPONE CONSTRUCTION CO., Dedham, Mass., tackle the Massachusetts Expressway job near Braintree, using their 2½-yd. Lorain-85 Shovel to remove a ledge of rock and dirt. This is their 4th Lorain.

THEW LORAIN

SAVES TIME ON VENT LINES

Naylor Spiralweld pipe is "made-to-order" for ventilating jobs in construction service.

Its light-weight makes for easy handling. It saves time on installation . . . especially with the one-piece Naylor Wedge-Lock coupling which can be joined with only a hammer. Lines hug the wall . . . can be assembled with only one side of the pipe in the open . . . and extended readily as work progresses.

You save money, too, because the greater collapse strength inherent in the Naylor structure permits the use of lighter gauge material without sacrifice of performance.

Write for the complete story. Ask for Bulletins No. 507 and No. 514.

NAYLOR PIPE

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Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

and bottom. As the concrete hardens, lower panels may be removed and used to build the form higher. Or panels may be removed to facilitate concrete placement or inspection.

Both plywood surfaces are usable. When one side becomes worn, the hardware can be reversed and the other surface used.

No nails or walers are needed. Since there is no projecting hardware, the panels stack flat when not in use.

According to the manufacturer the panels are easily assembled into rigid forms for pilasters, columns, beams, foundations, bridges, reservoirs, culverts and manholes. They are adaptable to any height and length. The manufacturer also says contractors have reported labor costs as low as 5½ cents per sq ft for forming with the panels. Widths range from 8 to 24 in., heights from 3 to 8 ft. Prices, including hardware, are $1.45 per sq ft for plyform, $1.60 for plywood. Form Co., Inc., Rockford, Ill.

"World's Slimmest" Room Air Conditioner Is 15 in. Thick

A new air conditioner is said to be the world's slimmest. Only 15 in. deep, it is appropriately called "The Slimline." According to the manufacturer, it can be flush mounted to eliminate overhang inside or outside the room. It is particularly recommended to builders of apartment houses, hotels, office buildings and factories.

Termed a Thru-The-Wall unit, the new air conditioner is available in ½, ¾ and 1 hp. sizes. Among advantages cited is the fact that a builder can install this conditioner in one or many rooms without entailing the cost of a central power plant and air ducts. Emerson Radio & Phonograph Corp., Jersey City 2, N. J.

Drinking Fountain Exterior Hides Fixture's Plumbing

Rounded surfaces that completely hide waste and supply lines are the key feature of a new stainless steel drinking fountain. Fabricated of 18-ga stainless steel with a no. 4 finish, the compact fountain is the latest addition to the HAWS line of fountains. Called the Model 7W, it offers an automatic flow control valve that assures a constant pressure-controlled angle stream. A chrome-plated brass fountain head shields the orifice and prevents direct mouth contact. Haws Drinking Faucet Co., Berkeley, Calif.

It's easy to dig more ditch with a

Gar Wood Buckeye

407

Put yourself in the seat and see the difference...

SPEEDS YOU CAN FIND and use! One selector lever plus high-low range lever makes changing speeds easy. No complicated diagrams to figure out!

PUSH-BUTTON CONVEYOR SHIFT speeds work around obstructions. Just push the button to shift conveyor electrically while digging! No need to stop machine.

INSTANT BOOM CONTROL, with live hydraulic action, makes it easy to maintain grade, clear underground obstructions. One convenient lever does it!

Fast, accurate adjustment for changing conditions saves time, boosts production

Gar Wood-Buckeye's 407 ditcher is far easier to operate, control and adjust than any other ladder-type ditcher in its class. Here's why:

Streamlined and compact, the 407 has the smallest practical dimensions for the widest range of applications. Lowest overall height, 7 feet 3½ inches, for easy transport without disassembly. It's exceptionally easy to maneuver in close quarters . . . digs neat, clean ditch right up to walls and foundations. Also digs in reverse for tunneling and undercutting. The boom on the 407 is raised, lowered and held by an independent, live hydraulic system. You get fast positioning with positive down-pressure.

All these advantages and more have made Gar Wood-Buckeye's 407 the world's largest selling ladder-type ditcher. See your Gar Wood-Buckeye dealer, or write to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

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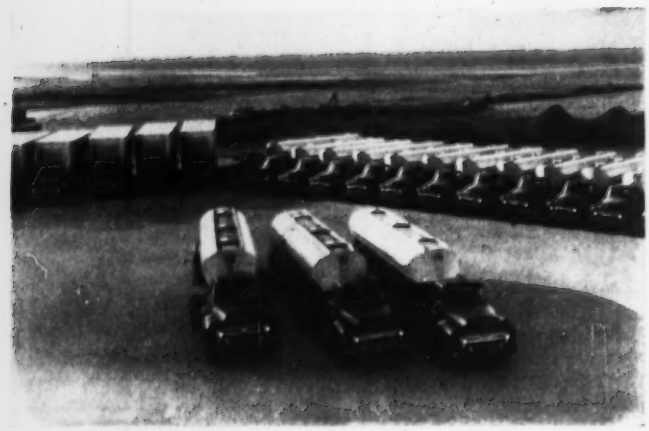
Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

Gar Wood Excavators	Gar Wood Tractor Equipment	Gar Wood Winches	Gar Wood-Buckeye Finegraders	Gar Wood-Buckeye Ditchers	Gar Wood-St. Paul Hoists & Bodies

LOOKING FOR THE LOWEST-COST TRUCK?

Take a tip from the men who buy trucks every year!

Big fleets buy more Fords



"Our 27 Fords average 5½ miles to the gallon," say cement haulers of Material Transportation Company, Harlington, Texas. "Oil economy is good, too. Our F-800 and F-900 BIG JOBS average 125,000 miles before we drop the pan. Fords are the most economical and satisfactory trucks we've ever used."

The big fleets keep complete cost records. They know which trucks cost less to buy and run. And official R. L. Polk registration figures PROVE FORD IS THE FAVORITE!

Take a look at these pages. These leading companies are just 4 out of thousands that are finding Ford trucks cost less to buy, less to run—*and* are "tops" for all-round economy.

The "men who buy trucks every year" must take everything into consideration . . . Short Stroke engine design for low oil and gas consumption . . . Ford's stronger chassis for longer life (insurance actuaries prove Ford Trucks last longer) . . . and Ford's higher resale value. So—from Pickups to 65,000-lb. GCW BIG JOBS, the big fleets are going Ford. You'll agree *Ford Trucks cost less*—when you see your Ford Dealer.

"Our 300 Fords cost less to run," says Johnson, Drake and Piper Inc. of N. Y. City, world-wide contractor and owner of F-800 BIG JOBS. "We've tried all makes but our records show that, when all factors are considered, *Ford Trucks cost less.* Low running costs. Low purchase price. High trade-in value."

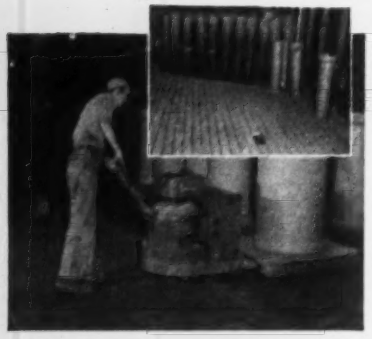
than any other make!

"Our 102 Fords last longer," says David L. Brown, Tennessee contractor and owner of Ford T-800 BIG JOBS. "In our kind of work, we need a truck that can take a real beating and keep on going. We have a Ford that's been running for 5½ years without a motor job—and it's still rarin' to go!"

"Our 30 Fords are easiest handling," says Elmer C. Breuer, Cleveland steel hauler. "Maneuvering our Ford F-900's in tight spots is timesaving and easy. And with that Power Steering our drivers finish fresh after a tough day's work. We're staying with Ford because they give us fast, dependable service."

FORD TRUCKS COST LESS—LAST LONGER

Using latest license registration data on 10,502,351 trucks, life insurance experts prove Ford Trucks last longest.



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Replace your slippery, rickety old wooden floors with the safest flooring available . . . *Tri-Lok* and *Tri-Forged* Grating. Here are some outstanding features: long life, unusual strength, adaptability, handling ease, minimum weight, maximum openings for light and ventilation. *Tri-Lok* and *Tri-Forged* products meet government specifications, are available in a wide range of panel sizes.

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DRAVO CORPORATION
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Beat the wind with an Optical Plummet Transit

Built-in optical plummet eliminates swing and sway of cord and plumb bob. Positive accuracy of set-up assured. Special tripod is standard equipment. *Write for Bulletin OP-57.*

Have you tried Variable Power?

Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with one eyepiece. Change magnification to suit weather, light. *Write for "Facts on VP"*

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SINCE 1845

Publications

Accessories—A new 16-page catalog of installation accessories for lubrication, hydraulic, steam, liquid, and air applications has been released by J. N. Fauver Co. Called Catalog 17-E, the booklet contains information, specifications and prices on adapters, couplings, extension nipples, hose clamps and snubber tools, hose stems and other devices, and a table "How to Determine Pipe Threads." J. N. Fauver Co., Inc., 51 W. Hancock, Detroit 1, Mich.

Insulation stops flames—An illustrated four-page folder describes new incombustible properties of J-M Rock Cork Refrigeration Insulation. By adding a newly developed binder to naturally fireproof mineral fibers, a low-temperature insulating material that will not burn has been achieved. The folder also describes other Rock Cork advantages. Johns-Manville, 22 E. 40th Street, New York 16, N. Y.

Tractor power—How to use tractors for handling industrial materials is described in a new publication by the Ford Motor Co. To be published four times a year, the magazine will carry the title "Ford Industrial Tractor Power" and is being sent to contractors, landscapers, public utilities and other users of the equipment. Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

Metal lath—Technical Bulletin 18 contains recommended methods for nailing metal lath to wood studs and nailing—or nailing and tying—metal lath to wood joists. Also in the 4-page folder are tabulated fire ratings, a table of types and weights of metal lath, and a page of wood construction detail sketches. Metal Lath Mfrs. Assoc., Engineers Bldg., Cleveland 14, Ohio.

Concrete fasteners—Pocket-size catalog No. 5603 illustrates and describes Star fasteners, drills and drilling devices. The 60-page booklet gives application information along with catalog numbers, prices, shipping weights and dimensions. Star Expansion, 142 Liberty St., New York 6, N. Y.

Portable plants—A brochure, Bulletin 238A, contains a series of suggested arrangements for portable and semi-portable rock crushing and screening plants, with illustrations and specifications. Nordberg Manufacturing Co., Milwaukee, Wis.

Pile hammer—The new S-20 single-acting pile hammer specifically designed for driving heaviest piles and delivering 60 blows a minute with a force of 60,000 ft-lb, is described in a bulletin. The bulletin, No. 59-A, explains features of the pile hammer that save operating time and maintenance cost, and includes operating data, dimensions, sectional elevations, and parts list. McKiernan-Terry Corp., 100 Richards Ave., Dover, N. J.

Flotation process—The theory and application of the flotation process preface a 20-page presentation of data and specification of equipment. Included is a detailed flowsheet of the process with general comments regarding unit sizes. Both the general data pamphlet with drawings, and versions tailored to specific applications are available. F. S. Gibbs, Inc., 2300 Washington St., Newton Lower Falls 62, Mass.

• **Sludge scrapers**—A 12-page bulletin describes the design, types and sizes, operation and advantages of the Dorrco Monorake for cleaning rectangular sedimentation basins; and tabulates actual maintenance costs from a number of installations. Sketches, line drawings and installation photographs of the unit and its components are included. Dorr-Oliver, Inc., Barry Place, Stamford, Conn.

Hydraulic systems—A 20-page catalog, Bulletin M5101A, describes oil hydraulic systems and components for all mobile equipment in the truck and bus, construction machinery, material handling, agricultural and allied industries. It contains discussions of performance characteristics, design features, construction details and applications. Vickers, Inc., Box 302, Detroit 32, Mich.

Pipe fittings—A four-page bulletin details AllCopper fittings for asbestos-cement pipe. Covered are rubber-sealed fittings, available in 3 to 12-in. sizes and in classes 100, 150 and 200. Bulletin AC 14. R. H. Baker & Co., 2070 E. Seaside Ave., Huntington Park, Calif.

Luminaires—Two 4-page catalogs contain specifications, photometric data and other information on Smithcraft's Turneter Series 5 (industrial) and Mercury (commercial) lines of fluorescent lighting fixtures. Smithcraft Lighting Div., Chelsea 50, Mass.

Semi-Automatic Rebuilding of SHEEPSFOOT TAMPERS

A novel idea for salvaging sheepsfoot tampers, with a saving of 45% in cost and 50% in down time, originated with Dave Moodie, master mechanic of J. A. Thompson and Son, large West Coast contracting firm.

As routine maintenance procedure the 220 individual tamper boots on each of the 24 compactors operated by this firm were manually hard-faced until recently in a circle-and-cross pattern; the tamps lasted three or four months before a loss of gauge made them no longer usable. In an eight hour shift the maintenance weldor could manually rebuild and hard-face 18 worn tamps.

Since the firm installed a semi-automatic welder adapted to the use of Stoody 3/64" wires, the picture has altered completely. Today the weldor, using Stoody 121, *rebuilds 70 worn tampers in a single shift!* Mr. Moodie's procedure employs "weld-casting" of the wearing face, using a split carbon mold of the correct finish dimensions. Stoody 121 is applied by the semi-automatic welder, with the mold shaping the large puddle to produce a hard-faced wearing surface of the required depth and gauge.

The rebuilt tampers hold their size twice as long at a considerably lower cost than hard-faced standard replacement boots. Material and labor are approximately $1.25 each for the rebuilt tamper.

You will find many suggestions for prolonging the life of all types of heavy equipment in the Stoody Guidebook. Your Stoody dealer has a copy for you. Look him up in the "Yellow Pages" of your phone book or write direct.

More speed, easier build-up and automatic sizing are obtained by this carbon mold clamped around the sheepsfoot tamper. Stoody 121 wire is applied semi-automatically.

Mold is machined to correct size, grips stem tightly to hold weld metal on wearing surface.

Notice how gauge is still held after 4 months service. Impact strength of Stoody 121 withstands repeated blows of twelve pound sledge used to seat and align tamps during installation.

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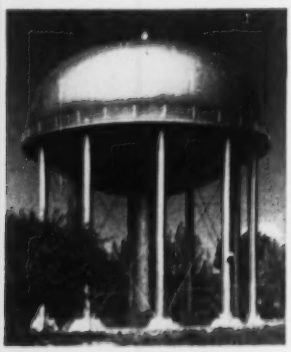
Weld-Crete is the amazing liquid bonding agent which enables you to *permanently* bond new concrete *directly* to old concrete . . . or to most any other structurally sound surface . . . *without need for costly, time-consuming chipping, drilling, roughening, acid washing or scarifying of concrete base.*

Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways, etc. one day and run heavy truck traffic over them the next. Get facts from your building materials supply dealer or write Larsen Products Corp., Box 5756-I, Bethesda, Md.

TYPICAL **WELD-CRETE** APPLICATION

National Brick Co., Terra Cotta, D. C.

Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.



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Men and Jobs

Army Names General Heiman To Head Military Supply Unit

The Department of the Army has announced the appointment of Brig. Gen. David W. Heiman as Acting Assistant Chief of Engineers for Military Supply.

Maj. Gen. Charles G. Holle, Acting Chief of Engineers, said General Heiman will replace Maj. Gen. William C. Baker who has been assigned as Commanding General of the Army's Engineering Training Center at Fort Leonard Wood, Mo. General Heiman, until recently Assistant Commandant of the Engineer School at Fort Belvoir, is a native of Philadelphia, graduated from West Point in 1928. During World War II he commanded the 52nd Engineer Corps Combat Regiment in New Guinea, Leyte, and Luzon.

In a parallel announcement, the Army announced that Col. R. D. MacDonnell now on the faculty of the Army War College, will become Commandant at Fort Belvoir.

Construction Manager Named For F. H. McGraw & Company

R. L. Senior has been appointed construction manager of F. H. McGraw & Company, engineers and constructors, and will make his headquarters at the company's New York Office. A graduate of the Brooklyn Polytechnic Institute, Mr. Senior served as a lieutenant in the Corps of Engineers during World War I and for a number of years carried on his own construction and engineering firm as R. L. Senior, Inc. During World War II he served as general superintendent on construction of naval facilities in Ireland and at the Davisville Naval Base in Rhode Island.

At the same time, the McGraw company announced the appointment of George B. Blonsky as product engineer on a $25-million fertilizer plant the company is building in Korea.

Great Northern Railway Shifts Engineering Chiefs

The Great Northern Railway at St. Paul, Minn., has announced that George V. Guerin has been appointed chief engineer. Mr. Guerin, who was assistant chief engineer at Seattle, will succeed R. R. Manion who has joined the New York Central System as assistant vice president for engineering.

Other Great Northern engineering appointments:

L. G. Reichert, to succeed Mr. Guerin at Seattle; B. G. Anderson formerly at Seattle, who will succeed Mr. Reichert at Duluth; W. G. Eschwig who becomes principal assistant engineer for western lines at Seattle; K. E. Wychoff, who becomes office engineer for western lines at Seattle. Further, B. H. Isenminger has been named to the post of Kalispell division engineer at Spokane.

Consulting Firm Adds Partner, Expanded Activity Is Planned

Arnold H. Vollmer, formerly a partner in the New York City firm of Brown & Blauvelt, has become a senior partner in the engineering firm of Barstow, Mulligan and Vollmer.

The firm, previously known as Barstow & Mulligan, specialized in the design of bridge projects but will now expand its practice as engineering consultants to include highways, parks and other public works, traffic engineering and urban site planning.

Men & Job Briefs

• **Associations**—The Conference of Federal Sanitary Engineers elects as president and chairman of the board **Gordon McCallum,** sanitary engineer director, United States Public Health Service . . . **Col. Michael J. Blew, USAR, Ret.,** joins the staff of the National Society of Professional Engineers as field representative, handling liaison with affiliate state societies and local chapters.

• **Col. John L. Person,** Ohio River division engineer in Cincinnati, is named to Maj. Gen. Itschner's former post effective Aug. 6 . . . **Col. Peter C. Hyzer** is assigned the post of district engineer, Detroit District, Corps of Engineers.

• **Honors**—Vice president of the Pittsburgh-Des Moines Steel Company, **James O. Jackson,** is the winner of the Martson Medal at Iowa State College. The medal is awarded annually to recognize an outstanding engineering alumnus of the college.

• **Careers**—The Arizona State Department of Health appoints as chief sanitary engineer, **T. A. Kolb** former sanitary engineer of the South Carolina Board of Health . . . **Tom Blench,** professor of hydraulics, University of Alberta, is appointed consulting engineer in government exploration for feasible water storage sites on the

Rough Going At Indianapolis

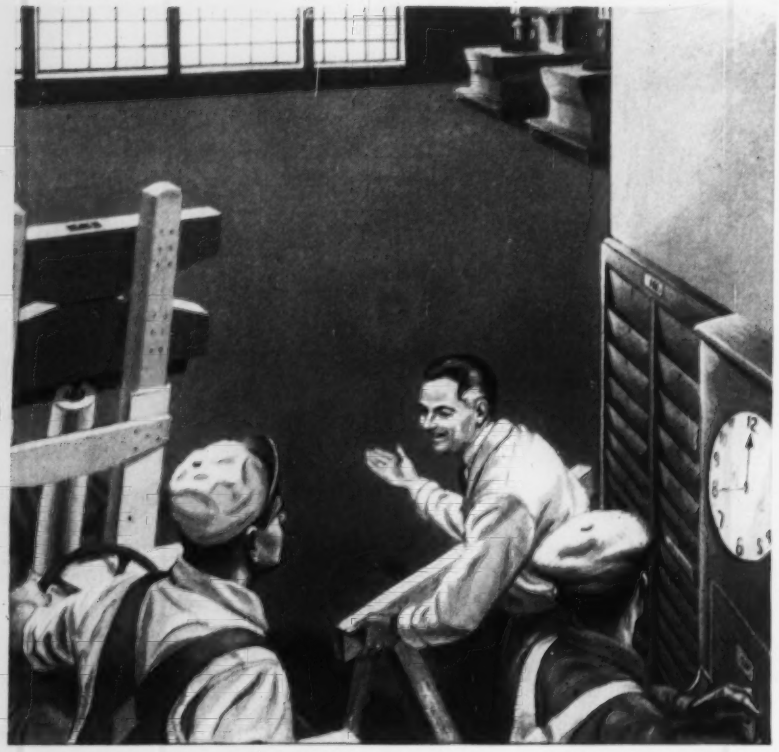
All wasn't peaches and cream when Columbia Construction installed 3000 feet of 36-inch pipe for the Indianapolis Water Company along White River Parkway in the Hoosier capital.

This picture shows where the line crossed 10th Street. A telephone conduit was supported with a timber thrown across the ditch, a 10-inch gas main crossed just below, and unstable soil kept filling the bottom. A 2-foot deflection was called for here and the contractor had to duck down under the existing utilities as well. Also, a tie-in was made with an 8-inch water main on 10th Street not shown in the picture.

"Although this was the first time we had installed a water line of concrete pressure pipe down city streets," reported Carl F. Kortepeter, engineer for Columbia Construction, "the steel and rubber joint made the pipe easy to work with. The 10th Street crossing wasn't too unusual and we used a couple of bevels to make our 2-foot deflection, then rotated one of them slightly to drop down enough to clear a gas main. Another bevel adapter or two brought us back on line."

The bevel adapters Mr. Kortepeter refers to are specials made up of a bell ring and a spigot ring set back to back at an angle of 2° or 4° and are kept on the job to handle such situations. The pipe on this job was prestressed concrete cylinder pipe and was supplied by Price Brothers Company with plants in Dayton, Cleveland and Miami.

Price



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If you just want to *repair* holes or smooth over damaged areas... Flintmastic, which is asphalt mastic made with famous Flintkote Flooring Emulsions, does *these* jobs quickly and economically, too.

Want to lay down a resilient leveling course as underlayment for decorative floor coverings? Flintmastic fills the bill again.

Remember this about Flintmastic. It is made with Flintkote *clay-type* asphalt flooring emulsion. Flintmastic floors carry the heaviest traffic without rutting or cracking. And these floors are quiet. Comfortable under foot. Shock-absorbing. Non-slip. Water-resistant. Fire-resistant.

Flintmastic specification mixes can be applied over new or old floors. In thin or thick section.

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. . . Men and Jobs

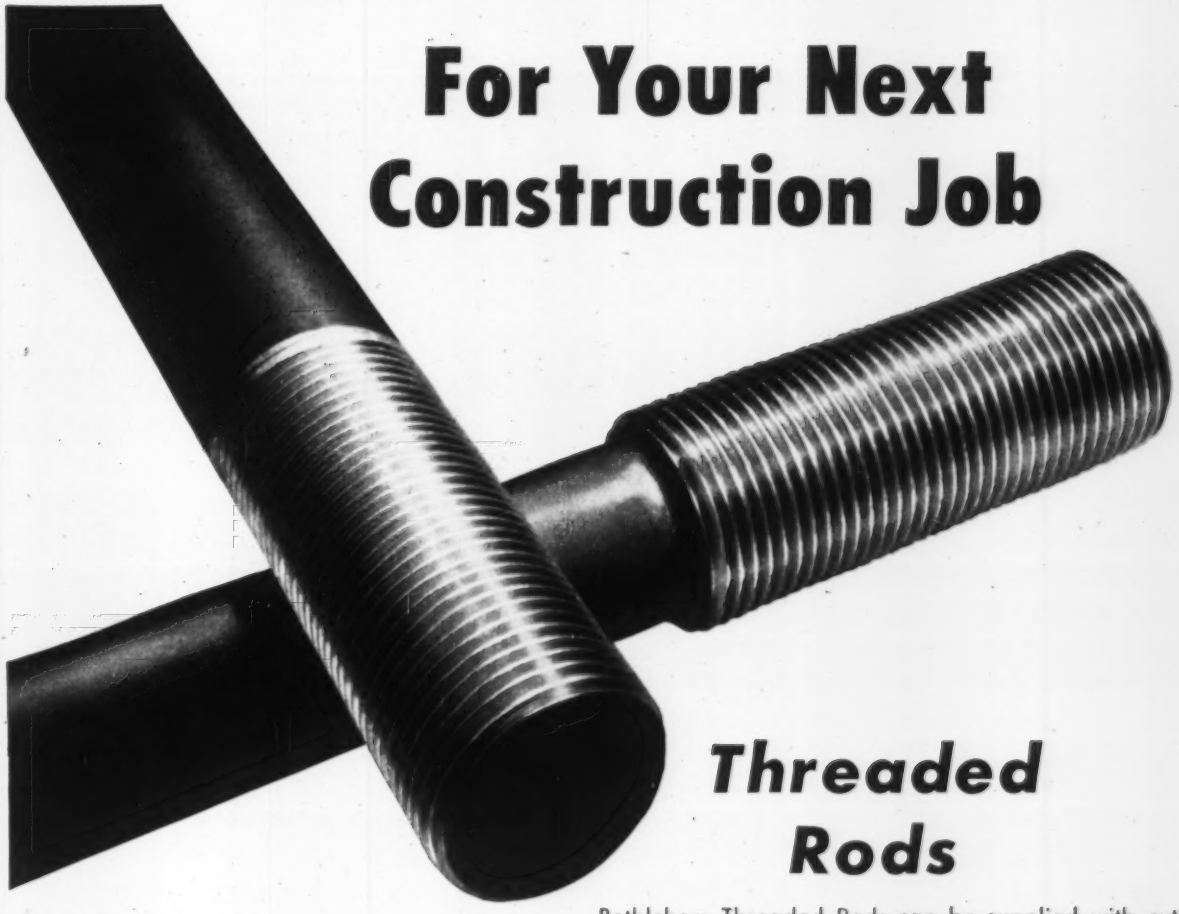
head waters of the Saskatchewan River . . . **John A. Rust**, chief engineer, maintenance of way and structures, Southern Railway System at Charlotte, N. C., has been appointed general manager of Eastern Lines with headquarters at Charlotte.

George O. Grant, civil engineer with the Ontario Department of Highways as assistant to the deputy minister, is named deputy roads commissioner of the Municipality of Metropolitan Toronto. He succeeds **B. W. Bemrose** who becomes chief project engineer . . . **Paul H. Willison** is named general manager of the Fresno, Calif., Irrigation District. He succeeds **Carl J. Gronlund** who resigned after 35 years with the district. . . **James R. Townsend**, city manager of Greensboro, N. C. is appointed chairman of the North Carolina State Board of Water Commissioners. . . . **Paul L. Holland**, former director of the Department of Public Health for Baltimore, Md., is made chief engineer of the Anne Arundel County Sanitary Commission in Maryland.

• **Business**—The consulting firm of Robert J. Strass, Inc., in Milwaukee, Wis., announces that **Emil F. Vranich**, structural engineer, joins the firm as vice president . . . A new structural engineering firm, King, Benioff & Associates, has been formed in Sherman Oaks, Calif, as a partnership of **Harold P. King** and **Ben Benioff**. Associates are **Gordon A. Kelsen** and **Hans G. Steinmann** . . . **Paul B. Benz** is named general superintendent of Joseph P. Blitz, Inc., a New York City contracting firm . . . **Walter T. McPhee**, formerly with Malcolm Pirnie Engineers, New York, joins the consulting firm of Weston, Eckenfelder and Associates, Newtown Square, Pa., as an associate.

E. T. Baker, chief engineer of the Michigan Turnpike Authority, joins the firm of Gannett, Fleming, Corddry & Carpenter Inc., consulting engineers of Harrisburg, Pa. . . . **Noel S. Chamberlin**, formerly associated with Wallace & Tiernan, Inc., joins the staff of Havens and Emerson, consulting engineers of Cleveland and New York City . . . **William L. Voorduin**, formerly of the Tennessee Valley Authority, joins the Development and Resources Corp., New York, as director of engineering. The corporation was formed last December by the investment banking firm of Lazard Freres & Co. with David E. Lilienthal and Gordon R. Clapp, both former chairmen of the TVA.

For Your Next Construction Job



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Bethlehem Threaded Rods can be supplied with cut threads or rolled threads. Cut-thread rods come plain or upset, in thread diameters up to and including 4½ in., and in all lengths. Rolled-thread rods also come in varied lengths, and in thread diameters up to and including 1½ in.

Bethlehem Threaded Rods can be supplied with turnbuckles, clevises, nuts or other accessories. They come straight or bent, in single or multiple units, asphaltum-dipped or hot-dip galvanized.

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Furnished in many standard grades of carbon or alloy steel, though usually made to ASTM Specification A-307. They come in a wide size range, with square, hexagon, tee, button and countersunk heads, and with cut or rolled threads of various types. The standard thread is American Standard Coarse, Class 2 fit.

Safety Timber Bolt

Sharp lugs under the head dig into the wood, preventing the bolt from turning when tightened. Underside of head also has spiral ribs, which retard water seepage. When installed, the head lies close to the work. There is no protruding wrench square to cause injury.

In addition to the fasteners shown here, Bethlehem also turns out many other fastener items in a wide range of types and sizes, making it easy for you to get exactly what you need. For full information, just get in touch with the nearest Bethlehem sales office.

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Obituaries

Ford Kurtz Dies at 71, Was Head of J. G. White Corp.

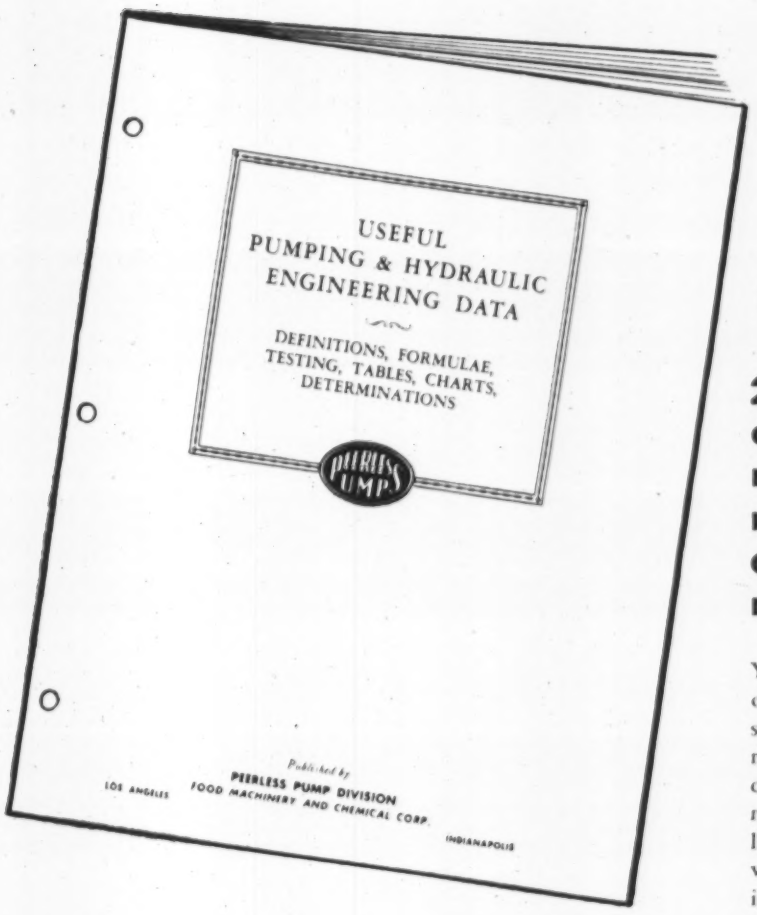
Ford Kurtz, president of J. G. White Engineering Corporation, died August 9 in Newberry, S. C. at the age of 71. While his knowledge of hydraulics made him an expert in this field, the scope of his endeavors ranged from power plants and industrial set-ups to railroads and refineries. Mr. Kurtz served as a consultant on the Svirstroi Dam in Russia as well as Montana's Fort Peck Dam and similar projects here and abroad.

Graduated at the head of Cornell University's civil engineering class in 1907, he began his career with J. G. White Corp. shortly thereafter, first spending two years with the U. S. Coast and Geodetic Survey. During his 46 years with the engineering firm, he progressed from assistant engineer to chief hydraulic designer, and was named president of the organization in 1953.

George P. Heneghan, 57, civil and structural engineer, died July 26. He was an associate of James A. McCarthy & Associates, consulting engineers of South Bend, Ind. During the thirties, Mr. Heneghan was a designer of bridges, consulting engineer, water works superintendent, project engineer for the Indiana State Highway Commission, and designer of sewage treatment plants. Prior to the war he was Assistant General Manager of the Dean Steel Corp., Chicago, Ill. In 1941, he went with Roberts & Schaefer Co., Chicago, where he served as supervising engineer of design and construction—concrete shell structures, buildings, hangars, and material-handling plants. A graduate of Notre Dame University, 1922, he was a licensed professional engineer in Indiana, Illinois and Michigan.

Walter J. Wohlenberg, 68, retired dean of engineering at Yale University, died in New Haven August 8. A member of the Yale faculty for thirty-eight years, he was a consultant to the Wright Aeronautical Division of Curtiss-Wright and to Babcock and Wilcox Company. He received a Bachelor of Science degree in mechanical engineering in 1910, from the University of Nebraska, which later conferred upon him the honorary doctorate of engineering. He also received a master's degree from the University of Illinois where he held a research fellowship.

Reserved for you – Mr. Engineer...



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Books

Foundation Engineering

FOUNDATIONS DESIGN AND PRACTICE—By Elwyn E. Seelye. 485 pp. John Wiley & Sons, Inc., New York, N. Y.; Chapman & Hall, Ltd., London. $16.

This book on foundation engineering is intended to be as useful to the designer as to the field man. Therefore, the arrangement of its contents, tailored to meet this objective, is rather unusual. In the author's own words:

"The field problems are presented in juxtaposition to the corresponding design information, since they add to the design engineer's basic understanding. For instance, the field methods of underpinning and shoring are included with the discussion of underpinning design; an engineer cannot exercise judgment in deciding, say, between an open pier and a pile foundation to rock unless he has an understanding of the difficulty of underpinning which the open pier may involve. On the other hand, field practice, which covers such points as an inspector's checking list, is not of direct interest to the designer, and it is therefore placed in another chapter."

Soil mechanics is presented in Chapter 13. It is preceded by discussion of design and construction methods for a wide variety of footings, retaining walls, bridge piers and abutments, dams and reservoirs, waterproofing, and in Chapter 8, evaluation of bearing power of soil.

Experienced engineers, using this volume for reference purposes, may find this arrangement advantageous. But students and beginners may be confused by such a late presentation of fundamentals.

The opening chapters offer design tables from which footing sizes can be selected for a variety of soil bearing values and concrete strengths; design details; data on safe bearing capacity of soils; pile spacing and pile penetration; and design methods for various types of foundations.

Chapters on construction methods deal with underpinning, grouting, mud jacking, excavation below groundwater, sheetpiling, wellpoints, cofferdams, shield tunneling and excavation in water. Embankments and pavements are treated in a separate chapter.

The chapter on field practice discusses footing bottoms, backfill, safety provisions, grading, pile driving, soil sampling, load tests and concrete in general. It is enriched by numerous check lists for field men.

As a guide in selecting the most appropriate materials and construction methods, the author also presents cost data. He gives the corresponding date and values of cost indexes to enable costs to be adjusted.

Having been in private engineering practice for more than 40 years, Seelye writes with authority, briefly and to the point. He has illustrated the book well. He has drawn on his vast experience not only to advise engineers on what to do in foundation work, but also has incorporated recommendations on what not to do, which he has labeled "red lights." Finally, he offers sound advice on exercising engineering judgment.

Miscellaneous Notes . . .

• **Blast-resistant design**—Results of a study on how to improve the resistance of concrete houses to nuclear explosions are presented in an eight-page pamphlet, "Blast-Resistant Concrete Houses Design Considerations." The study was made for the Portland Cement Association by Ammann & Whitney, consulting engineers, and Ellery Husted of Gugler, Kimball & Husted, architects—both of New York City. The pamphlet gives characteristics of a blast wave, layout of a house to minimize blast effects and recommended details for a one-story house. It can be obtained from the PCA, 33 W. Grand Ave., Chicago 10, Ill.

• **Home air conditioning** research yields data and conclusions set forth in a new 26-page booklet entitled "Residential Air Conditioning". Findings are the result of technical medical and psycho-psychological tests conducted in a 22-home experimental air-conditioned village in Austin, Texas. The report has been prepared primarily for homebuilders by the Research Institute of the National Association of Home Builders. Among its conclusions: Year-around comfort in the home, with modern heating and cooling systems, is relatively inexpensive. Also, glass areas should be the minimum consistent with aesthetic and sales requirements—all glass should be shielded from direct sunlight. The booklet outlines six cost items to be considered by builders contemplating air conditioning. Write NAHB Research Institute, National Housing Center, 1625 L St., N. W., Washington 6, D. C. $2.00.

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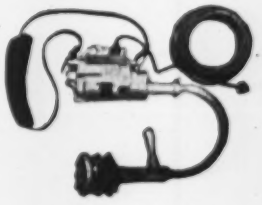

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Legal

Subcontractor's Recovery For Partial Performance

A subcontractor whose work has been halted because the general contract is voided may recover from the general contractor the fair and reasonable value of the work he has done in the absence of any provision to the contrary.

Such a case arose in Massachusetts when the general contract for construction of the Chronic Disease Hospital and Nurses' Home in Boston was ruled void.

The subcontractor had already performed part of his contract. He sued the general for the difference between the value of the materials and labor furnished and the sums received from the general contractor before the contract was killed.

The court allowed the subcontractor a recovery, holding that where a subcontract called for performance of work and payment according to the terms of the general contract, and the general contract was held to be invalid, the general contractor owed nothing under the subcontract but the subcontractor could recover, in an action on contract. Amount of recovery, said the court, is the difference between the value of materials and labor furnished and the sums already paid by the general contractor, in the absence of an express provision in the subcontract that the subcontractor should be paid only if the general contractor was paid.

(1) M. Ahern Co. v. John Brown Co. Inc., 133 N.E. 2d 484, Supreme Judicial Court of Mass., April 5, 1956.

Liquidated Damages Upheld In Public Works Contract

A provision for liquidated damages for delayed performance in a public works contract is usually accorded the same status it has in a private contract. And a municipality doesn't need legislative authority to insert such a clause.

In an Ohio case, for example, a contract for construction of a sewer system provided that the work would be completed within a period of 150 days and also provided for liquidated damages in the sum of $25 per day for each day the work extended beyond the time stipulated for completion.

The contractor brought an action to recover a sum that he claimed was due him under the contract. The municipality counterclaimed liquidated damages for delayed performance. The contractor claimed the provision in the contract for liquidated damages was not contained in the ordinances that authorized the work and for that reason was void. The court allowed the municipality a judgment for the liquidated damages, holding that the letting of a contract by a municipality for a public improvement is not a legislative function.

The court stated: "Provisions in contracts for damages for delay in completion of public construction are frequently made, and such contracts are measured by the same tests and are subject to the same rights and liabilities as are other contracts. 10 McQuillin, Municipal Corporations (3rd Ed.), 498, Section 29.125. The terms of the contract in the instant case are not unusual and in our opinion are very reasonable, considering the expenses to the village caused by the delay."

(1) Snyder v. Village of McArthur, 133 N.E. 2d 399, Court of Appeals of Ohio, May 2, 1956.

Reasonable Compensation Where No Price Is Fixed

In the absence of any express agreement as to compensation, the law infers that a contractor will receive reasonable compensation for his services.

An electrical contractor in Indiana, for example, offered to do a "patch up" job for $500. After he started to do the work, the owner of the building decided to do a complete new job and directed the contractor to do the necessary work. No agreement was made as to the price to be paid for the complete job. After the work was completed, the owner refused to pay the contractor more than $500, and the contractor brought an action to foreclose a mechanic's lien for the amount of the fair and reasonable value of the materials furnished and work performed.

The trial court found as a fact that the original agreement providing for a payment of $500 was cancelled and a new agreement entered into. The contractor was granted a judgment for what the court found to be the fair and reasonable value of the work and the judgment was affirmed on appeal.

The appellate court stated: "There was no express agreement as to compensation and no situation is disclosed whereby it can be inferred that the appellee (contractor) furnished labor and materials without expectation of being paid. Under such circumstances

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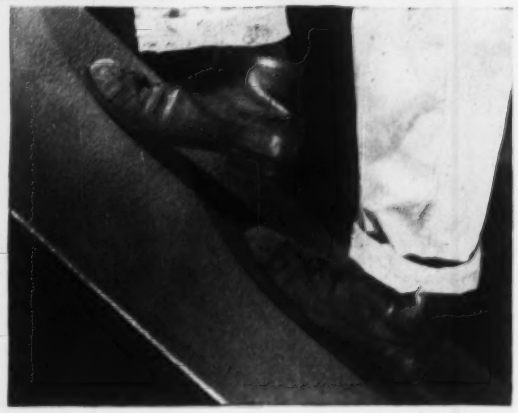

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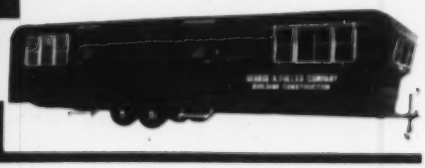

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. . . Legal

the law implies a promise on the part of appellants (owners) to make reasonable compensation for the labor and materials so furnished. Page, Law of Contracts, Vol 1, Section 1442; Louisville, N. A. & C. Ry. Co. v. Hubbard, 1888, 116 Ind. 193, 18, N. E. 611."

(1) De Armond v. Carter, 134 N.E. 2d 239, Appellate Court of Indiana, May 14, 1956.

Federal Contract May Give Final Decision to Engineer

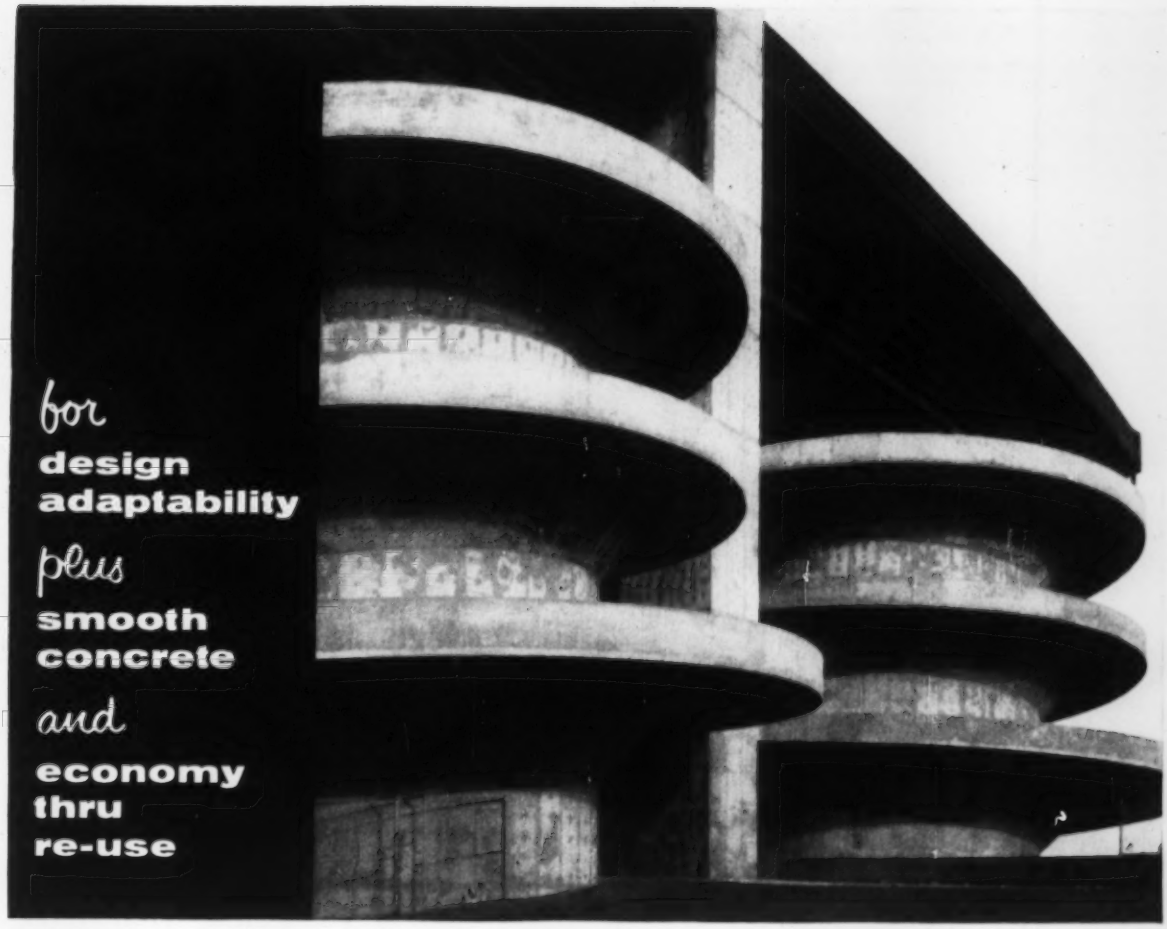
Contracts with the federal government present no exception to the general rule that the architect's or engineer's determinations may be final and conclusive.

Under a contract to remodel the hospital facilities at Camp Polk, La., for example, United Enterprises, Inc., as the prime contractor entered into a subcontract with Adam J. Lanehart for painting called for by the general contract. The subcontractor was to be paid $90,000, subject to additions or subtractions for extra work or for parts of the work that might be eliminated.

The subcontractor claimed he was entitled to $96,217.96 for work done under the contract and, in addition, to $1,616.60 for extra work. The government brought an action for the benefit of the subcontractor to recover the difference between what the prime contractor had paid him and what the subcontractor claimed was due him. The prime contractor contended the amount due the subcontractor under the contract was $87,978.82, against which payments in the amount of $86,170.60 had already been made to the subcontractor, leaving a balance due the subcontractor of $1,808.22, which the prime contractor had tendered to the subcontractor.

The prime contractor contended the reduction in the contract price resulted from elimination of certain parts of the work as a result of instructions given by representatives of the United States and that the subcontractor knew that work of the value of $3,294 had been eliminated at the time the subcontract was entered into. The prime contractor also contended the amount it paid and was willing to pay the subcontractor represented the amount the subcontractor was entitled to according to computations made by government representatives, and that none of the work done by the subcontractor was extra work.

The subcontract contained the following provision: "Article 3. The work included in this contract is to



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The automatic central mixing plant is midway on the 10-mile job. Three men run it. 14 Dumpcretes haul its 95,000 yd. production.

Here's the bonus. The single plant supplies concrete for bridges, culverts, walls and widening as well as paving.

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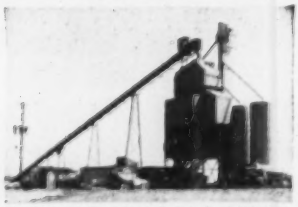

Central mixing plant located midway on job.

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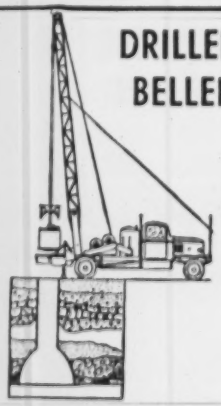

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be done under the direction of said architect (U. S. Engineer) and his decisions, as to the true construction and meaning of the drawings and specifications shall be final * * *."

The trial court limited the subcontractor's recovery to the amounts computed on the basis of the computations made by the representatives of the government. This judgment was affirmed on appeal, the appellate court stating: "The holding of the trial court that, as a result of the terms of the subcontract, Lanchart was bound by the decisions of the Government Engineer as to what the prime contract required, and that the Government Engineer's interpretation of the original contract was conclusive on Lanchart is correct.

"The provisions of the subcontract are clear, and similar contract provisions have been approved and enforced by the United States Supreme Court. United States v. Moorman, 1950, 338 U. S. 457, 461, 462, 70 S. Ct. 288, 94 L. Ed. 256; United States v. Wunderlich, 1951, 342 U. S. 98, 72 S. Ct. 154, 96 L. Ed. 113. In the Moorman Case, the Supreme Court said: 'Contractual provisions such as these have long been used by the Government. No congressional enactment condemns their creation or enforcement.'"

(1) United States v. United Enterprises, 226 F. 2d 359, U. S. Court of Appeals, Sept. 30, 1955.

Arbitration of Disputes Turns On Contract Clause

An arbitration clause in a contract extends to all disputes between the contracting parties if the language of the provision is general in nature.

In a New York case, two members of a joint venture were required to arbitrate their dispute over the sale of an interest in the joint venture.

The venture had been formed for the purchase of land and the construction of some buildings. This clause was contained in the contract between the participating parties: "In the event of any controversy, difference or disagreement among the parties concerning any matter affecting this joint venture which cannot be resolved among the parties unanimously, the parties agree that the same and all matters concerning the same shall be submitted for hearing and decision to the American Arbitration Assn."

A claim was made by one of the parties to the venture that certain correspondence constituted a contract on

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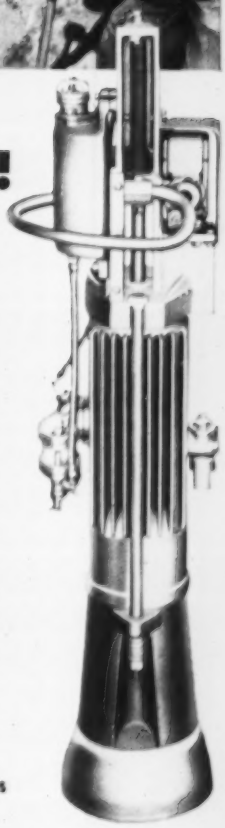

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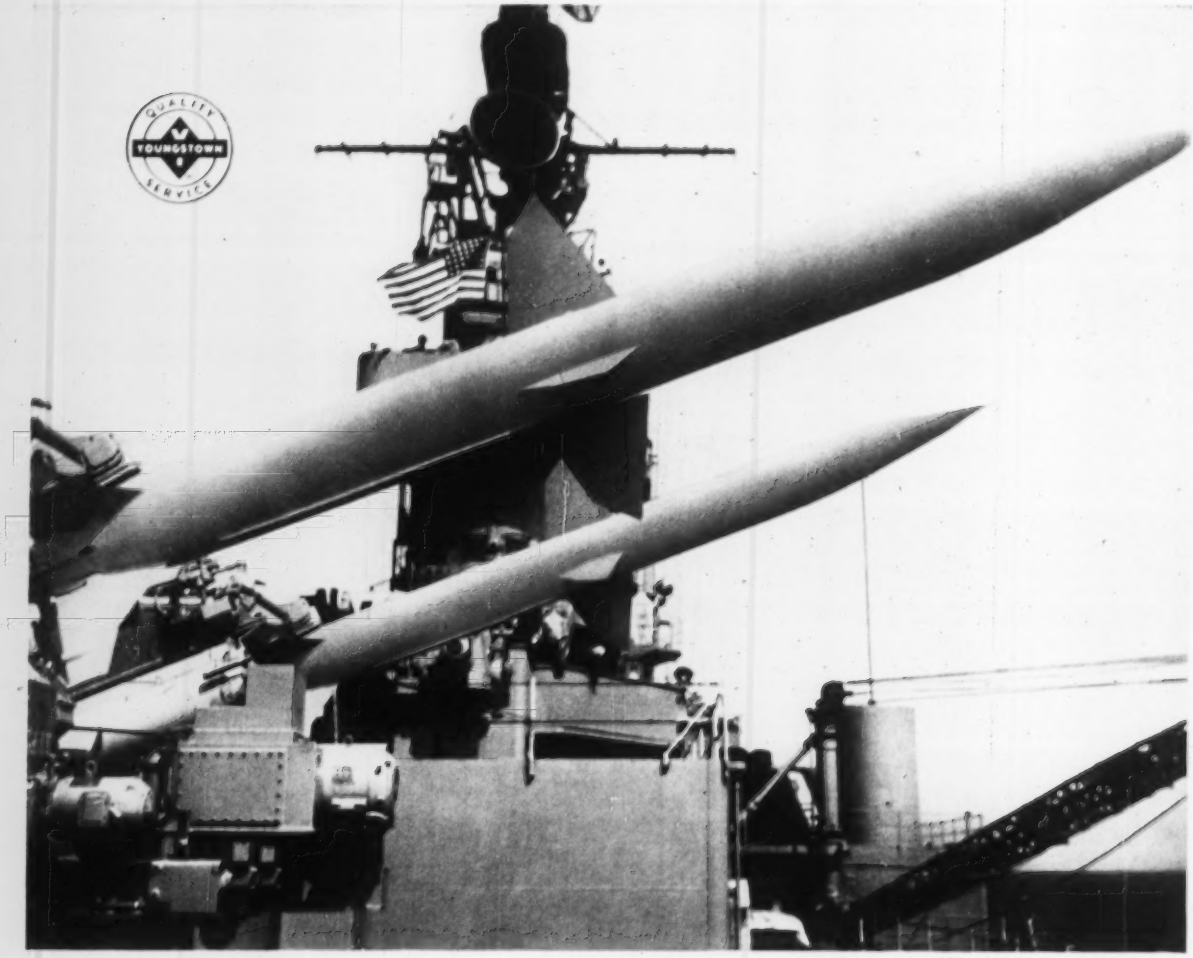

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the part of one of the parties to purchase the joint-venture interest of one of the other parties. On failure to purchase, the party who wanted to sell made a demand for the arbitration of the dispute. The defending party made an application to the court to stay the arbitration proceeding. The court denied the application.[1]

The court stated: "Parties to a contract may agree that any and all controversies growing out of such contract are to be submitted to arbitration. If they do, the New York courts will give effect to their intention. Marchant v. Mead-Morrison Mfg. Co., 252 N. Y. 284, 169 N. E. 368."

Referring to the arbitration provision of the contract, the court said: "It is to be noted that the above quoted clause specifies that any matter affecting the joint venture is to be submitted to arbitration. This language is broad and all inclusive, and it seems clear that the parties intended that all disputes, including the present one, should be settled by arbitration. River Brand Rice Mills, Inc. v. Latrobe Brewing Co., 305 N. Y. 36, 40, 41, 110 N. E. 2d 545, 546, 547."

(1) Binkow v. Brickman, 145 N.Y.S. 2d 530, Supreme Court, N.Y., Sept. 26, 1955.

May Recover for Work Done When Contract Is Rescinded

When a contract is rescinded after some of the work has been done, the value of the work done and not the contract price determines the amount the contractor can recover.

In a federal case in Indiana, for example, a prime contractor had engaged a sub to do the plumbing and heating work. Some of this work had been completed when the parties orally agreed to rescind the contract.

In an action by the sub against the prime contractor to recover for work done, the sub asked for—and received—the difference between what he had been paid and the fair and reasonable value of the work he had done, after deducting the payments that had already been made directly to persons who had furnished materials to the subcontractor.[1] Because the contract had been rescinded, the court held the original contract price could not be considered in computing the amount due the subcontractor.

The prime contractor was Traylor Bros., Inc.

(1) United States v. Traylor Bros., Inc., 133 F. Supp. 104, U.S. District Court of Indiana, July 27, 1955.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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Unit Prices

Akron, Ohio, Installs Water Line 16.5% Under Estimate

Akron will furnish 25,000 lin ft of cast iron pipe and the hydrants for its new water line. The contract for placing it goes to M. B. Guran Co., Akron, on his low bid of $62,575 which is 16.5% below the engineer's estimate and 14.35% below the second low bid. Wendell R. LaDue is city water engineer.

ASTM standards class 25 are required for 4- and 16-in. cast iron pipe and class 24 for 6-, 8-, and 12-in. pipe.

Wages are $3.235 for cement masons, $2.71 for truck drivers and $2.20 to $3.175 for equipment operators.

1C M. B. Guran Co., Akron, Ohio	$62,575
2 Lockhart Coal & Contr'g Co., Akron, Ohio	73,060
3 L. & B. Construction Co., Akron, Ohio	73,360
EE W. R. LaDue, city water engr, Akron, Ohio	74,950

Bids: 6-8-56 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, earth	cy	15,500	$0.10	$0.02
rock	cy	300	0.10	5.00
trenches for water service	lf	10,000	0.30	1.00
Concrete masonry	cy	40	1.00	20.00
CIP, 4", with lead joints	i lf	500	1.00	1.40
6", with lead joints	i lf	15,500	2.21	2.20
8", with lead joints	i lf	6,000	2.32	2.30
12", with lead joints	i lf	1,000	2.42	2.40
16", with lead joints	i lf	2,000	2.52	2.75
Fire hydrants, set	ea	50	32.00	50.00
Gravel refill	cy	600	0.10	2.00

Time to complete: 9 months
Liquidated damages: $10 per day

Montana Canal Bids Siphon Against Over-River Crossing

This 11-mile Paradise Valley Canal will carry 20 to 85 cfs of irrigation water under a 400-ft river and railroad crossing. The precast concrete pipe siphon took the contract away from the alternate bid on long-span precast concrete pipe on piers. It is for Montana State Water Conservation Board, Helena, R. H. Fifield, chief engineer, to irrigate 3,000 acres near Livingston.

For $215,514, the contract went to Long Construction Co., Billings, Mont. This is 20.6% below the total second low bid on the siphon alternate and 24.66% below the total low bid on the alternate with long span pipe. Bidding $98,335 on structures and $71,568 on over river crossing, A&B Construction Co., Helena, was second low on these individual sections. Their bid, however, did not cover the canal.

The contract calls for 225,456 cu yd of excavation, including 1,370 cu yd below river water surface; 4,479 lin ft of precast concrete and corrugated metal pipe, air vents, blowoffs, gates, lumber and paving, all materials furnished by the contractor.

Specifications require that concrete tests at 3,000 lb in 28 days. ASTM standards C 76-41 must apply to precast concrete pipe.

1C Long Const. Co., Billings, Mont. (Alt. B)	$215,514
2 McLaughlin Const. Co., Livingston, Mont. (B)	271,321
3 Cop Const. Co., Billings, Mont. (B)	306,889

Bids: 6-8-56 Items	Unit	Quantity	Unit Prices 1C	2
Canal				
Excav, canal, unclassified	cy	218,600	$0.26	$0.28
Emb process tractor comp	cy	17,400	0.25	0.35
Lining, bentonite	sy	17,000	1.00	1.20
Totals			78,186	89,398
Canal Structures				
Lumber	Mfbm	85,671	200.00	250.00
Concrete, cl B	cy	168	95.00	100.00
Paving, conc	cy	15.7	80.00	80.00
rock	sy	1,480	3.15	7.00
Struct, excav	cy	1,255	3.15	1.50
bkfl	cy	1,272	1.60	1.50
tractor compact	cy	314	0.80	1.00
Trench, pipe, excav	cy	2,991	0.55	1.50
bkfl	cy	2,232	1.60	1.50
Air vents, complete, 2½"	ea	2	25.00	50.00
3"	ea	1	50.00	60.00
4"	ea	3	50.00	70.00
Blowoff, complete, 4"	ea	4	150.00	120.00
CMP, close rivet couplers, 24" 12 ga	lf	48	7.00	12.00
culv, w coupl, 12" 16 ga	lf	180	4.20	5.00
18" 16 ga	lf	90	6.75	6.00
24" 16 ga	lf	316	5.50	8.00
30" 14 ga	lf	94.81	7.00	10.00
36" 14 ga	lf	44	8.50	12.00
CP, prec, incl bends SS L.J, 30"	lf	14.18	13.00	16.00
SS CJ & L.J, 24"	lf	58.20	9.50	12.00
33"	lf	82.71	14.00	16.00
42"	lf	54.07	21.00	23.00
48"	lf	533.50	25.00	30.00
SS Tylox jt, 12"	lf	60	3.00	5.00
18"	lf	64	6.00	8.00
36"	lf	70	15.75	18.00
48"	lf	54	26.00	27.00
54"	lf	30	30.00	35.00
60"	lf	110	36.00	45.00
arch, flared ends, 36"	lf	76	18.00	25.00
CP, prec, reducer, 30x24"x4"	ea	1	60.00	100.00
Steel, struct	lb	1,025	0.50	0.50
reinf	lf	12,100	0.20	0.25
Gates, Armco # 101M or equal 30" dia, 6' Fr, 4' well	ea	1	210.00	250.00
5' Fr, 4' well	ea	2	250.00	480.00
# 101F, 30" dia, 5½ well	ea	1	175.00	150.00
Totals			85,130	104,421
River Crossing, Alternate A, Long Span Pipe				
Concrete, cl B	cy	84		100.00
cl C	cy	123		100.00
Rock paving	sy	30		10.00
Excav, struct, inlet outlet & small piers	cy	227		5.00
river piers	cy	455		10.00
Backfill struct	cy	188		4.00
river piers	cy	350		5.00
Trench, pipe, excav	cy	700		4.00
backfill	cy	820		2.00
Pipe, long span, 48" dia, 387' long	ls	job		50,000
CMP, close rivet & solder, 48", 12 ga	lf	2		60.00
CP, prec, SS L.J, 48"	lf	70		35.00
ES Tylox jt, 48"	lf	42		35.00
Steel, struct	lb	2,300		0.60
reinf	lb	11,300		0.25
Gate, Armco 101M or equal, 48", 9' Fr, 5½" well, f&p	ea	1		750.00
Total				92,214
River Crossing, Alternate B, Concrete Pipe Siphon				
Concrete, cl B	cy	34	100.00	100.00
Rock paving	sy	30	5.00	10.00
Struct, excav	cy	134	10.00	5.00
backfill	cy	95	5.00	3.00
Trench, pipe, excav, above river water surf	cy	1,106	5.00	5.00
below river water surf	cy	1,370	5.00	10.00
backfill, above wat surf	cy	1,020	1.00	4.00
below wat surf	cy	1,164	1.00	6.00
CMP close rivet & solder, 48", 12 ga	lf	2	50.00	60.00
CP, prec, SS L.J, 48"	lf	107.13	60.00	50.00
ES Tylox jt, 48"	lf	42	60.00	60.00
ES L.J & C.J	lf	368.85	60.00	90.00
Blowoff, complete, 4"	ea	1	250.00	100.00
Steel, reinf	lb	1,700	0.20	0.30
Gate, Armco 101M or equal, 48", 9' Fr, 5½" well	ea	1	500.00	750.00
Totals			52,198	77,502

Work started: 7-1-56, to be completed: 7-1-57
Liquidated damages: $50.00 per day

New Kaiser Aluminum RIB-WALL* Siding

brings the contemporary look to industrial buildings

New Kaiser Aluminum Rib-Wall* Siding with its deep, box-ribbed shadow line and handsome stucco-embossed finish brings the style and distinction of modern architecture to industrial and commercial buildings—and at surprisingly low cost.

The rectangular ribs of improved design provide increased strength, yet this remarkable siding is so easy to handle that construction is faster and lower in cost. Strength with light weight also permits the use of lighter, less expensive supporting members.

Use Kaiser Aluminum Rib-Wall Siding in single sheets for building with conventional construction, or combine it with insulation and an inner sheet for field-fabricated sandwich walls.

With a one-inch layer of glass fiber insulation sandwiched between sheets of Kaiser Aluminum Rib-Wall Siding, Industrial Corrugated Siding—or a combination of the two—you get an attractive, economical panel with high structural strength and excellent insulating efficiency.

Whatever you're planning to build, figure first in Kaiser Aluminum for better value at lower cost! And to get the A.I.A. File and complete information on Kaiser Aluminum industrial building products, contact any Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office*, Palmolive Bldg., Chicago 11, Illinois; *Executive Office*, Kaiser Bldg., Oakland 12, California.

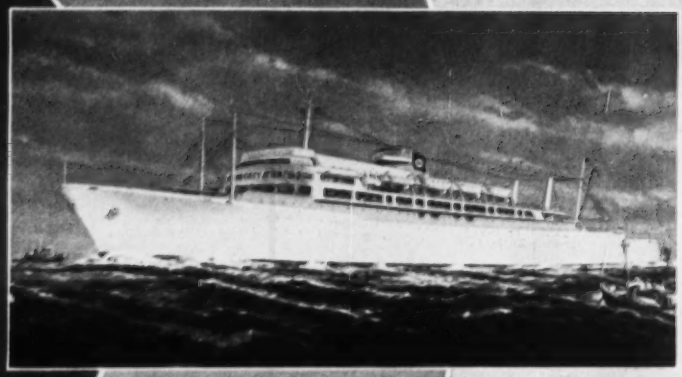
*Trademark

Kaiser Aluminum field-fabricated "sandwich" wall. Insulation is applied over inner wall of Kaiser Aluminum Industrial Siding. Exterior is Kaiser Aluminum Rib-Wall Siding.

Kaiser Aluminum

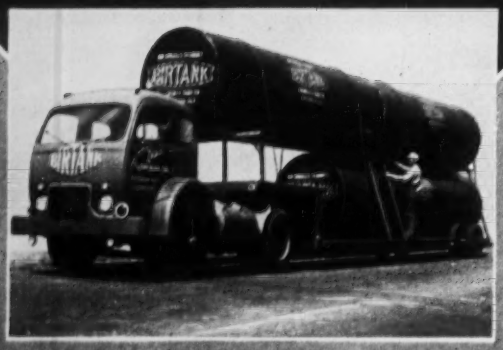
Industrial Building Products

THE INGALLS COMPANIES



MOORE-McCORMACK LUXURY LINER

Shipbuilding: The Ingalls Shipbuilding Corporation is building two luxury liners for Moore-McCormack, largest ever built on the Gulf Coast.



STORAGE TANKS DELIVERED TO SITES

Plate and Tank Work: Birmingham Tank Company, an Ingalls subsidiary, makes all storage tanks, pressure vessels, bins, stacks, rotary kiln dryers, ducts, flues, blast furnaces; fabricates steel, aluminum, stainless steel, other alloys.

WORLD'S LARGEST STEAM-ELECTRIC PLANT
Kingston, Tenn.

Steel Fabrication: The Ingalls Iron Works Company enjoys a nation-wide reputation for excellence as fabricator of steel for all types of buildings, power houses, bridges and many other steel applications.

KENTUCKY DAM BRIDGE, Gilbertsville, Ky.

Steel Erection: The Ingalls Steel Construction Company erects structural framework for bridges, buildings, power houses, tanks, bins and stacks.

THE INGALLS COMPANIES are widely famed for services to both industry and government. They offer a great range of working knowledge gained through intense, practical experience in the fields they cover. Each of these four corporations, known as THE INGALLS COMPANIES, is a specialist of distinction. Each has the acquired skill and accumulated knowledge to offer *extras* of speed, economy and quality. Each is ready to serve you today. You are invited to write for special, promptly sent free literature on any or all of these subjects.

THE
INGALLS
COMPANIES
BIRMINGHAM, ALABAMA

THE INGALLS SHIPBUILDING CORP.
Shipyards: Pascagoula, Mississippi, Decatur, Alabama.
Sales Offices: New York, Philadelphia, Washington, Houston, New Orleans, Chicago, Atlanta.

BIRMINGHAM TANK COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans, Pascagoula.

THE INGALLS IRON WORKS COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans.

THE INGALLS STEEL CONSTRUCTION COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans.

Materials and Labor Prices — Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES: • Aug. 30—Clay Products, Lime, Plaster, Paint, Roofing, Wage Rates, Building Board, Lath, Insulation • Sept. 6—Cement, Aggregates, Ready-mixed Concrete, Asphalt • Sept. 13—Iron & Steel Products, Pipe

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2. Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	†	**$83 00**	**$88 00**	**$77 50**	**$76 00**	**$79 50**	**$83 00**	**$81 00**		
Baltimore	*	**91 00**	**96 00**	**96 00**	**98 00**	**98 00**	**102 00**	**114 00**		
		105 00g	*105 00g*	*125 00g*	*125 00g*	*125 00g*	*125 00g*	*125 00g*	*$144 00*	*$144 00*
Birmingham	†	**86 00**	**88 00**	**81 00**	**88 00**	**91 00**	**96 00**	**111 00**		
		107 00	*107 00*	*110 00*	*110 00*	*110 00*	*111 50*	*110 00*	*107 00*	*107 00*
Boston	‡	**112 00a**	**114 00a**	**117 00a**	**117 00a**	**117 00a**	**116 00a**			
		90 00n	*90 00n*	*114 00*	*114 00*	*114 00*	*151 00*	*187 00*	*158/163*	*163/163*
Chicago	**	**98 00**	**101 00**	**94 00**	**109 00**	**117 00**	**118 00**	**119 00**		
		108 00	*108 00*	*120 00*	*119 00*	*119 00*	*120 00*	*138 00*	*138 00*	*138 00*
Cincinnati	*	**101 25**	**102 50**	**90 00**	**98 25**	**103 00**	**111 50**	**119 50**		
		102 00	*103 00*	*111 50*	*115 25*	*114 75*	*118 00*	*138 00*	*138 00*	*138 00*
Cleveland	**	**96 00**	**98 00**	**108 00**	**105 00**	**105 00**	**106 00**			
				122 00	*118 00*	*118 00*	*118 00*	*136 00*	*136 00*	*136 00*
Dallas	k‡	**75 00**	**82 00**	**75 00**	**75 00**	**72 00**	**72 00**	**130 00**		
Denver	*	*Not in stock*		*120 00*	*121 00*	*121 00*	*122 00*	*138 00*	*138 00*	*164 00*
Detroit	‡	**118 00**	**118 00**	**114 00**	**115 00**	**118 00**	**122 00**			
		125 00	*125 00*	*133 00*	*130 00*	*130 00*	*135 00*	*138 00*	*196 00*	*196 00*
Kansas City	*	**130 00**	**130 00**	**125 00**	**130 00**	**140 00**	**140 00**			
		130 00	*130 00*	*130 00*	*130 00*	*135 00*	*140 00*	*168 00*	*168 00*	*$10 00*
Los Angeles	‡	*101 00*	*101 00*	*101 00*	*101 00*	*101 00*	*101 00*	*135 00*	*135 00*	*135 00*
Minneapolis	#	*145 00*	*145 00*	*148 00*	*148 00*	*148 00*	*148 00*	*185 00*	*185 00*	*185 00*
Montreal	ab	**96 00**	**106 00**	**96 00**	**96 00**	**115 00**	**134 00**			
		180 00	*180 00*	*180 00*	*180 00*	*180 00*	*180 00*	*170 00*	*170 00*	*170 00*
New Orleans	†	**92 00**	**92 50**	**97 00**	**97 00**	**96 00**	**100 00**	**124 50**		
	†	*115 50*	*115 50*	*118 50*	*125 50*	*125 50*	*125 50*	*156 00*	*156 00*	*156 00*
New York	‡	**119 00**	**120 00**	**125 00**	**130 00**	**130 00**	**130 00**	**175 00**		
				125 00	*125 00*	*127 50*	*127 50*	*175/180*	*175/180*	*175/180*
Philadelphia	‡	Range from $117.00 to $137.00					**117/137**	**117/137**		
		Range from $181.00 to $168.00					*151/168*	*156/158*	*165 00*	*165 00*
Pittsburgh	2	**130 00**	**140 00**	**130 00**	**155 00**	**140 00**	**145 00**			
		130 00	*130 00*	*130 00*	*155 00*	*140 00*	*145 00*		*200 00*	*200 00*
St. Louis	#	**117 00**	**119 00**	**127 00d**	**129 00d**	**129 00e**	**135 00e**			
				135 00	*137 00e*	*137 00e*	*145 00e*	*193 00e*	*193 00*	*193 00*
San Francisco	A	*89 00*	*89 00*	*89 00*	*89 00*	*89 00*	*89 00*	*116 00*	*194 00*	*158 00*
Seattle	†	*65 00*	*75 00*	*76 00*	*76 00*	*76 00*	*80 00*	*95 00*	*95 00*	*96 00*
Toronto	a	**100 00**	**103 00**	**98 00**	**98 00**	**100 00**	**105 00**	**117 00**		
		114 00	*117 00*	*128 00*	*130 00*	*130 00*	*140 00*	*140 00*	*145 00*	*150 00*

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	¼"	¾"
Atlanta †			$22 32	$27 24
Baltimore *	$170 00	$188 00	25 92	31 60
Birmingham †	118 00	160 00	21 78	26 58
Boston ‡			25 92	31 60
Chicago **	141 00	141 00	22 45	27 37
Cincinnati *	141 75	141 75	25 00	30 48
Cleveland **			25 37	30 93
Dallas k‡	130 00	140 00	18 72	22 80
Denver *			13 92	16 98
Detroit ‡	130 00		25 00	30 48
Kansas City *			16 56	20 16
Los Angeles ‡			16 61ab	20 25ab
Minneapolis #			19 89	24 25
Montreal ab	123 00	123 00		
New Orleans †	186 00	184 00	18 72	22 80
†	260/280	260/280	25 92	31 60
New York ‡				
Philadelphia ‡	214/224	214/224	25 92	31 60
Pittsburgh 2	158 00		25 92	31 60
St. Louis #			18 72	22 80
San Francisco A			12 22	14 91a
Seattle †				
Toronto a	110 00			

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad., truckload lots, 5/8 Mftbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *g No. 1 common. *j 8ft. lengths. *k No. 3 common. *n #3. A incl rail rate from North west mills to San Francisco are $11.50 to $18.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $147.00; on ¼", $165.00. Exterior ⅜", $163.00, ½", $183.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a Lower rate by water shipment. *b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	77½c	78½a	$0.2465
Baltimore	74½d	76½d	.2465
Birmingham	82%	83%	.1915
Boston	72-10%	72-10%	.2465
Chicago	72%	72%	.2465
Cincinnati	74%	74%	.2465
Cleveland	74-2-10%	74-2-10%	.2565
Dallas	75%	75%	.2540
Denver	73%	73%	.2515
Detroit	74-10-10%	74-10-10%	.2465
Kansas City	76-10%	76-10%	.2515
Los Angeles	70%	70%	.2490
Minneapolis	71-10%	71-10%	.2515
Montreal	40-10-5%bc	40-10-5%b	22.05h
New Orleans	78%	78%	.2515
New York	80%	80%	.4125g
Philadelphia	74%	74%	.2465
Pittsburgh	71%	71%	.2465
St. Louis	76-10%	76-10%	.2515
San Francisco	61%	66%	.2465
Seattle	67%	70%	.2490

Price of 40% Ammonia Gelatin is $0.15 per lb. higher in Canada. $1.75 per 100 lbs. higher in U. S.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c 77½% for single strength *d Discount 8/15/52. *e 77½% for double strength

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1915	$0.2265	$0.2465
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.1965	.2315	.2515
Rocky Mtn. States	.1965	.2315	.2515
Pacific N. W. States	.1940	.2290	.2490
Pacific S. W. States	.1915	.2265	.2465

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	
12-in.—2-ft. from butt	6-in.	90 to 100-ft.		
13-in.—3-ft. from butt	5-in.	91 to 100-ft.		
14-in.—2-ft. from butt	6-in.	50 to 59-ft.	50/.68	
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	78/.88	93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	83/93	94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.		1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.		1.02

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		3.85a		4.60a
New York	S. L. Sap Pine	2.00f	4.00f	3.00g	6.00g
	Mixed Oak	2.50f	4.50f	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.80		3.05	
	Red Oak	2.70	3.25a	2.90	3.55a
	Sap Pine or Cypress		3.15a		3.50a
San Francisco	Douglas Fir	2.13ef	3.09ef	2.88ef	4.63af

Tr.—Treated; Untr.—Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cel d 6 x 8 x 8'6" e Green. f f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Holyoke**—HOSPITAL—BA 8/29—Providence Hospital, 679 Dwight St., hospital, boiler house, laundry, Brightside Institute Property, Proj. 50-547, $4,500,000. Eggers & Higgins, 100 E. 42 St., New York, N. Y., archts. CD 12/14/55.

▲ **Mass., Needham**—HIGH SCHOOL—BA 9/13—Town, Supt. Schools, 1330 Highland Ave., William F. Pollard Junior High School, Harris Ave. $1,600,000. Plans deposit $75. The Architects Collaborative, 96 Mt. Auburn St., Cambridge, archts. CD 10/24/55.

▲ **Conn., New Haven**—HIGH SCHOOL—BA 10/18—Town, New Haven, East High School, Mitchell Dr.; West High School, Beaver Pond Park. $5,000,000. Schilling & Goldbecker, 18 Trumbull St., Hartford, archts. Henry A. Pfisterer, 111 Whitney Ave., engr. CD 6/19.

HEAVY CONSTRUCTION—LB & CA

Harry Maring Jr., Inc., 436 Lindley St., Bridgeport, Conn. CA $695,000. est. $725,000. Contr. No. 2, incineration plant, Bostwick Ave., BRIDGEPORT, CONN. City, City Hall, Bridgeport, Conn. CD 8/2, under LB.

L & R Constr. Co., of Medford, 36 Earl Ave., Medford, Mass. LB $685,533. est. $444,299. SCHOOL, NORTH READING, MASS. Town, School Housing Comm., Daniel H. Shay, chn., c/o Bd. P. Wks., Flint Memorial Hall, North Reding, Mass.

Alexander Schnip & Sons Inc., 107 Forest St., Norwich, Conn., CA $514,216, COUNTY JAIL, Montville, NEW LONDON, CONN. New London Co. Court House, New London, Conn. Bids June 22. CD 7/2, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. J., Trenton**—SCHOOL—BA 8/30—Bd. Educ., 9 S. Stockton St., 1 story brick, glass, 67,500 sq. ft. vocational school. $1,500,000. Micklewright & Mountford, Prospect St. and Stuyvesant Ave., archt.-engrs. CD 9/28/55.

N. J., Westville Grove—SCHOOL—BA 9/11—Deptford Twp. Bd. Educ., 1 and 2 story brick, block junior high school, $700,000. Hettel & Albert, 4101 Marlton Ave., Pennsauken, archts. CD 4/9.

▲ **N. Y., Huntington**—HIGH SCHOOL BA 9/18—Bd. Educ., Union Free School Dist. 3, Town of Huntington, Village Green School, Park Ave., senior high school, McKay Ave. and Oakwood Rd. $2,000,000. Plans deposit $50 general const.; $25 trades. Frederic P. Wiedersum Assocs., 85 W. Hawthorne Ave., Valley Stream, archts. CD 4/12.

HEAVY CONSTRUCTION—LB & CA

Marcam Contg. Co., Inc., 16 Atlas Ave., Malverne, N. Y. LB $588,676. est. $629,800. No. 1, transition chamber in parklands along center line of 72 Ave., and regulator and cut-off chamber at intersection of 72 Ave., appurtenances, sanitary sewer, appurtenances in Park Dr. east; combined sewer, appurtenances in 72 Ave., Vleigh Pl., 136 St., 71 Rd., 70 Rd., 70 Ave., 71 Ave., 141 St., Main St., 72 Dr., and combined sewer, appurtenances in 137 St., Third Ward, NEW YORK. President, Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Aug. 2. CD 7/24.

▲ **NEW YORK**—P. Wks. Dpt., John W. Johnson, supt., The Gov. Alfred E. Smith State Office Bldg., Albany. **George M. Brewster & Son, Inc.**, 275 Fort Lee Rd., Bogota, N. J. CA $4,308,572. 2.76 mi. four-lane divided thruway spur connecting the main 427 mi. New York to Buffalo-thruway sect. with Garden State Parkway now under constr. in New Jersey, Rockland Co. CD 7/31, under LB.

▲ **James McHugh Constr. Co.**, 6449 S. South Park St., Chicago, Ill. CA $1,382,849. est. $1,600,000. storm water sewer for Albany St., BUFFALO, N. Y. Buffalo Sewer Auth., City Hall, Buffalo, N. Y. Bids June 26, awarded Aug. 10. CD 6/18.

▲ **Gull Constr. Corp.**, 53-15 Lawrence St., Flushing, N. Y. and **Horn Constr. Co. Inc.**, 2174 Hewlett Ave., Merrick, N. Y. CA $1,957,075, paving and utilities for Trans World Airlines Hangar 12, New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids July 17. CD 6/18.

D. T. Brooks, Inc., 2611 Ninth Ave., Beaver Falls, Pa. CA $526,277. general constr. and mechanical work, water filtration plant, distr. sys., addn., modification, Eastvale, BEAVER FALLS, PA. Municipal Auth. of Beaver Falls, Beaver Falls, Pa. CD 8/3, under LB.

▲ **Chas. W. Williams & Assoc.**, 2210 Maryland Ave., Baltimore 18, Md. LB $2,389,036. est. $2,225,000. (4 bidders) 1st sect., Jones Falls Expressway storm water conduits, BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Aug. 8. CD 7/26.

▲ **Joseph Nebel**, 3408 Wisconsin Ave., Wash., D. C., CA, $2,000,000. Studios and transmitter Station on Nebraska Ave., near Massachusetts Ave. N.W., WASH., D. C. National Broadcasting Co., 1625 K St. N.W., Wash., D. C. Bids June 5. CD 5/29.

Humphreys & Harding, Barr Bldg., Wash., D. C. CA $770,519. underpass on Kenilworth Ave. N. E. at Eastern Ave., WASH., D. C. D. C. Govt. Dpt. Hys., 499 Pa. Ave. N. W., Wash., D. C. Bids June 22, awarded July 20. CD 6/29, under LB.

BUILDINGS—LB & CA

Cement Plant Constructors, Box 1110, Picton, Ont. CA Est. $750,000. bulk distribution PLANT, silos, bagging plant, warehouse facilities for coarse aggregate, rock, etc. ROCHESTER, N. Y. Lake Ontario Portland Cement Co. Ltd., Picton, Ont. Federated Consultants, Ltd., 79 Scollard St., Toronto, Ont. and Burns & Roe of Michigan, Inc., 2740 Book Bldg., Detroit, Mich., engrs. Awarded August 6.

▲ **H. F. Stimm Co.**, Ellicott Square, Buffalo, N. Y. CA Est. $1,000,000. expansion 1 story, steel, brick Chevrolet FOUNDRY, TONAWANDA, N. Y. General Motors Corp., River Rd., Tonawanda, N. Y.

Frederick Wirtz, Inc., Pascack Rd., Paramus, N. J. Owner Builds. $900,000. 30 HOMES off Pascack Rd. Washington Twp., WESTWOOD, N. J. Lester Cohen, 254 Clinton St., Hackensack, archt.

John J. McDonnell, 69 St. Theater Bldg., Upper Darby, Pa. LB $874,000. general constr. 1 story, 333x237 ft. brick Shady Grove Junior High SCHOOL, AMBLER, PA. Ambler Junior High School Auth., Ambler, Pa. Bids Aug. 2. CD 7/2.

▲ **McClain Constr. Co.**, 20 S. 13 St., Phila., Pa. CA Est. $1,000,000. 210x960 ft. tilt wall concrete slab warehouse with truck loading dock and gravity feed conveyors, BRISTOL, PA. Kaiser Metals Products, Inc., 300 Park Ave., New York 22, N. Y. Kaiser Engineers Div., Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif., engr. CD 4/19.

Raff & Ferguson, Huntingdon Pike, Bethayres, Pa. Separate Contracts. Est. $924,000. RESIDENTIAL DEVELOPMENT, Swede St., CENTER SQUARE, PA. Henry Hermaus, 262 Ashbourne Rd., Elkins Park, archt.

Curtis Jones, 1400 Walnut St., Phila., Pa. Separate Contracts. Est. $416,000. RESIDENTIAL DEVELOPMENT incl. 32 units, Detweiler Lane, CENTER SQUARE, PA.

▲ **George Fad**, 806 Bethlehem Pike, Flourtown, Pa. Separate Contracts. Est. $1,110,000. RESIDENTIAL DEVELOPMENT, Skippack Pike, CENTER SQUARE, PA.

▲ **Orleans Constr. Co.**, 100 W. Rockland St., Phila., Pa. Separate Contracts. Est. $4,000,000. RESIDENTIAL DEVELOPMENT, 2100 block, Bleigh St., PHILA., PA.

▲ **Style Craft Builders**, 6730 York Rd., Phila., Pa. Separate Contracts. Est. $1,200,000. RESIDENTIAL DEVELOPMENT, PHILA., PA.

Haverstick-Borthwick Co., 3416 N. Sydenham St., Phila., Pa. CA $100,000. meat processing PLANT office addns., alterations, PHILA., PA. Dietz & Watson, Inc., 115 Vine St., Phila., Pa. Albert S. Fidemyr, 814 Rowland Ave., Cheltenham, engr.

Piracci Constr. Co., Inc., 2552 Woodbrook Ave., Baltimore, Md. CA $500,000. SHOPPING CENTER, parking area, ARGUTUS, MD. Food Fair Properties, Inc., 99 Park Ave., New York, N. Y. Lathrop Douglass, 518 Fifth Ave., New York, N. Y., archt. Throop & Feiden, 150 E. 13 St., New York, N. Y., engrs.

Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore 2, Md. CA $485,200. 2 story, 100x112 ft. brick, rein.-con., steel PHARMACY, BALTIMORE, MD. University of Maryland, Lombard & Green Sts., Baltimore 1, Md. CD 7/17, under LB.

Bickerton Constr. Co., 101 W. 22 St., Baltimore, Md. CA $373,841. 4 story, brick, concrete, steel nurses residence, (Baltimore, Md.).

▲ **Dashiells & Son**, Salisbury, Md. LB $1,465,000. (5 bidders) junior-senior high SCHOOL, Chesapeake City, ELKTON, MD. Cecil Co., Bd. Educ., Elkton, Md.

James H. Wood, Inc., Dover, Del. LB $683,300. Caesar Rodney SCHOOL addn., WYOMING, DEL. Caesar Rodney Special School Dist., Wyoming, Del. Louis M. Doane, Penna. R. R. Bldg., Wilmington, Del., engr. Bids Aug. 1. CD 7/18.

John McShain, Inc., 1501 N. Arlington Ridge Rd., Arlington, Va. CA $560,000. 3 story, masonry, steel RESIDENCE and RELIGIOUS bldg. 700 Monroe St. N. E., WASH., D. C. Congregation of the Missionary Sons of the Immaculate Heart of Mary of the Eastern Province, 700 Monroe St., Wash., D. C. Bids July 17. CD 7/10.

SOUTH

HEAVY CONSTRUCTION—LB & CA

VIRGINIA—Richmond—Petersburg Turnpike Auth., 1015 E. Main St., Richmond.

Blythe Bros. Co., P.O. Box 989, Charlotte, N. C., CA, $903,663. Contract E-1-G, Section F, Appomattox River Crossing, grading, drainage, paving and structures from Bollingbrook St. to the north bank of Appomattox River, City of Petersburg. Bids July 31. CD 8/6, under LB.

Lambeth Constr. Co., 1071 Retreat St., Greensboro, N. C. LB $561,863. water and sewer impvs., 6- to 16-in. pipe, manholes, gate valves, etc., GREENSBORO, N. C. City, City Hall, Greensboro, N. C. Bids July 31. CD 3/9.

BUILDINGS—LB & CA

U. S. Eng., First & Douglas Sts., N.W., Wash. 25, D. C., cancelled bids to have been opened Aug. 23, construct and finance, 618-family HOUSING UNITS, Eng. 49-080-57-3 (5), FORT BELVOIR, VA. CD 8/6, under LB.

▲ **U. S. Eng.**, Box 1229, Galveston, Tex. cancelled bids to have been opened Aug. 23, construct and finance 2,000-family housing units (Capehart), Eng. 41-243-57-1, FORT POLK, LA. CD 7/27.

Dickerson, Inc., Monroe, N. C., LB $689,735. four SCHOOLS alterations and addns., CHARLOTTE, N. C. Mecklenburg Co. Bd. Educ., Court House, Charlotte, N. C. Edwin Wilson, 1370 Briarcreek Rd., Charlotte, archt. Bids Aug. 7.

J. L. Coe Constr. Co., Builders Bldg., Charlotte, N. C. CA $852,057. STATE OFFICE, RALEIGH, N. C. State Bd. P. Bldgs. & Grounds, Agriculture Bldg., Raleigh, N. C. Bids July 24. CD 8/1, under LB.

T. U. Parks & Co., 711 E. Main St., Chattanooga, Tenn. CA $775,376. RESIDENT DORMITORY on campus, CHATTANOOGA, TENN. University of Chattanooga, McCallie Ave., Chattanooga, Tenn. CD 7/18, under LB.

▲ **Consolidated Contractors**, 1489 Thomas St., Memphis, Tenn., LB $3,590,334, excavation and foundation work on $135,000,000 electric POWER STEAM PLANT, MEMPHIS, TENN. Memphis Light, Gas & Water Comm., 2996 Hy. 61 S., Memphis, Tenn. CD 8/26/55.

Graver Water Conditioning Co., 216 W. 14 St., New York, N. Y., LB $221,135, water treating equip. for electric plant (Memphis, Tenn.).

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Ohio**—BA 9/24—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., covering relocation of 19 mi. of railroad bed at flood safe levels in connection with the Dillon, Ohio Dam & Reservoir Proj., $1,-500,000 appropriated. CD 6/27/43, under Wash. D. C.

BUILDINGS—BA

▲ **O., Willoughby**—PLANT—BA 8/28—General Electric Co., River Rd., Schenectady, N. Y., selected list of bidders, plant for cleansing and fusing quartz for lamp div. $1,000,000-$1,500,000. Giffels & Vallet, Inc., 1000 Marquette Bled., Detroit, Mich., archt.-engrs. CD 2/17.

▲ **O., Richmond Heights**—RESEARCH CENTER—BA 8/31—General Electric Corp., River Rd., Schenectady, N. Y., selected list of bidders, light bulb research center for lamp div. on 76-acre site south of Highland Rd. $2,000,000. Giffels & Vallet, Inc., 100 Marquette Bled., Detroit, Mich., archts. CD 1/23.

▲ **O., Cleveland**—LABORATORY—BA 8/31—General Electric Co., River Rd., Schenectady, N. Y., selected list of bidders, lamp development laboratory at Nela Park Works, East Cleveland. $4,000,000-$5,000,000. Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., archts. CD 4/3.

BUILDINGS—LB & CA

▲ **McCarthy Bros. Constr. Co.**, 4403 Delmar St., St. Louis, Mo., CA $1,750,000. HOSPITAL addn. CINCINNATI, O. Good Samaritan Hospital, Clifton Ave., Cincinnati, O. Bids Aug. 2. CD 7/23.

▲ **Gustav Hiersch Organization, Inc.**, 1347 W. 5 Ave., Columbus, O., CA, $1,174,000, electrical work at engine PLANT, LIMA, O. Ford Motor Co., The American Rd., Dearborn, Mich. CD 6/14/55.

Armco Steel Corp., W. W. Sebald, Pres. 1934 Armco Ave., Middletown, O. Owner Builds. $800,000. 35,-000 sq. ft. "Steelox" bldg. FACTORY, for mfr. of spiral-welded steel pipe piling, MIDDLETOWN, O. CD 3/17/55.

(Continued on page 92)

Push-loading scrapers is one of many profitable Tractor Dozer applications. Unit here is working on relocation of Arkansas Highway No. 1.

Before you buy <u>any</u> dozer...

Check Michigan Tractor Dozer's 27 mph speed, power-tilting bowl, full-time four-wheel traction

If you're in the market for any kind of dozer, be sure to check the new MICHIGAN Tractor Dozer before you buy. This job-proved unit dozes 2¼ cubic yards per pass. Its turbo-charged diesel engine develops 165 hp, with maximum rimpull of 28,000 lbs.—plenty for heavy-dozing, land-clearing, or push-loading. At 27 mph, it runs rings around any dozer on the market!

Full traction while turning. All four wheels of the Tractor Dozer are *always* driving, except when you declutch rear axle for highway travel. Rear-wheel steer eliminates unnecessary tire wear—you don't brake or drag inside wheels on turns. If one wheel begins to slip, a locking differential automatically applies power to wheel with firmest footing.

High flotation tires, oscillating axle. Big low pressure tires give the Tractor Dozer excellent ground contact in wet, dry, or sandy footing. You can cross railroad tracks or travel along ties or road bed; you can climb curbs and drive safely on any kind of road surface. On uneven terrain, the steering-wheel axle oscillates to keep both rear wheels in firm contact with the ground. With 14½ inches of ground clearance, it's practically impossible to get "hung up."

Power-shifting, 300% torque multiplication. Clark's power-shift transmission eliminates the conventional engine clutch and foot pedal—the most notorious cause of excessive maintenance and operator fatigue. With two fingertip levers on the steering column, operator can instantly shift between High-Low and Forward-Reverse—even when moving in either direction.

The 3-to-1 Clark torque converter gives a steady power flow, regardless of speed. As load gets heavier, torque output automatically increases up to 300% at stall speed—gives the extra torque to plow through the roughest spots. You can't stall the engine, and there's no clutch to slip.

Power-tilting bowl. Powerful double-acting hydraulic cylinder tilts bowl back and forth through 33 degree arc. You can change angle of bowl from "dig" to "float" as you work . . . move cutting edge back and forth to uproot stumps and boulders. Two 6-inch lift cylinders give tremendous lifting power and down-pressure—cutting edge raises from 24¼ inches below ground level to 43¼ inches above.

See Tractor Dozer in action—on your job. Write us to arrange a demonstration. You pick the work . . . then time cycles, measure output, compare price per yard of dozing capacity (don't forget MICHIGAN's f.o.b. price includes power-shift transmission, torque converter, planetary-wheel axles, and power-tilt blade . . . you don't have to pay for "extras" to get top efficiency). Or, if you'd like more details, before taking the time to watch a demonstration, ask us to show you a 20-minute color movie of the Tractor Dozer. No obligation, of course.

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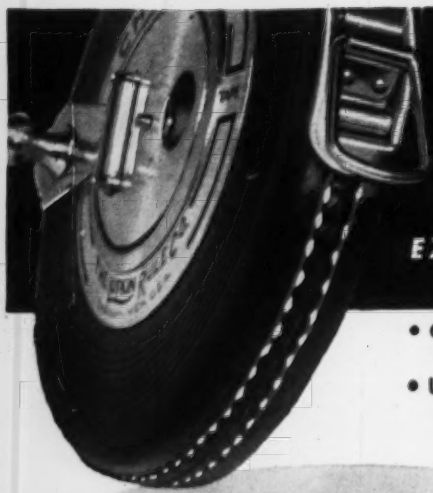

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(Continued from page 90)

▲ Gustav Hirsch Organization, Inc., 1347 W. 5 Ave., Columbus, O. and Fischbach & Moore, Inc., 226 E. 41 St., New York, N. Y. CA; $1,902,500, electrical work on automatic transmission PLANT, SHARONVILLE, O. Ford Motor Co., The American Rd., Dearborn, Mich. CD 6/24/55.

▲ Larrick & Larrick, c/o Frederick P. Geyer, 17 Lawn St., Dayton, O. Owner Builds. $1,500,000. 152 HOMES near here, 60-acre site, Rte. 48 to be known as Springview Acres. UNION, O.

▲ Fred Ross Constr. Corp., 1545 Crestwood Lane, Hamilton, O. Own forces. $3,000,000. 183 40x26 ft. bsmt., brick veneer pre-cut HOMES, off Riddle Rd., WOODLAWN, O. Miami Engr. Co., 151 High St., Hamilton, O., engr.

Otto A. Schulz, 3114 Harrison St., Evanston, Ill. CA; $550,000. 2 story, brick BANK, parking area, southeast corner Lee and Prairie Ave., DES PLAINES, ILL. First National Bank of Des Plaines, 678 Lee St., Des Plaines, Ill. Stade, Dolan & H. Anderson Assoc., 819 Busse Hy., Park Ridge, Ill., archts.

Ragnar Benson, Inc., 4744 W. Rice St., Chicago, Ill. CA, $500,000. 2 story, brick, steel, concrete old peoples HOME addn., EVANSTON, ILL. Swedish Societies Old Peoples Home Assn., 2320 Pioneer Rd., Evanston, Ill. M. P. Aznavoorian, 4744 W. Rice St., Chicago, engr.

E. W. Sproul Constr. Co., 173 W. Madison St., Chicago, Ill., CA, $507,505. CHURCH, PARK FOREST, ILL. United Protestant Church, 10 Hemlock St., Park Forest, Ill. CD 5/10, under LB.

▲ F & S Construction Co., Higgins Rd., Roselle, Ill. Own forces. $2,000,000. 40-unit, 1 story, 100,000 sq. ft. SHOPPING CENTER, SCHAUMBURG, ILL. Fitch, Schiller & Frank, 23 E. Jackson Blvd., Chicago, archts.

Hansen & Werhane, 3104 Skokie Valley Rd., Highland Park, Ill., CA, $884,839. Thomas Jefferson High SCHOOL, bit paving, Lewis Ave. S. of Belvidere St., WAUKEGAN, ILL. School Dist. 61, 574 McAlister Ave., Waukegan, Ill. Bids July 18. CD 7/31, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† Colo., Colorado Springs—HEADQUARTERS—BA 9/11—Dpt. Air Force, P.O. Box 1670, Colorado Springs, 6 story 832,000 sq. ft., Cadet Quarters bldg., Air Force Academy. Skidmore, Owings & Merrill, 3333 N. El Paso St., archt.-engrs. CD 11/9/55.

▲ Tex., Fort Worth—BA 9/20—City, c/o Dr. Jack Garrison, mayor, City Hall, South Holly Water Plant, south of present plant. $3,500,000. Plans deposit $50. Freese & Nichols, 407 Daniger Bldg., engrs. CD 5/15.

BUILDINGS—BA

Tex., Houston—LIBRARY—BA 8/30—Texas Southern University, 3201 Wheeler, library, $565,000. Wyatt C. Hedrick, 5201 Fannin St., consult. engr. CD 2/2.

▲ Tex., Dallas—PLANT—BA 9/14—Dallas Times Herald, Herald Square, 5 story bsmt. newspaper plant addn. $1,000,000. Harold K. Smith, Mercantile Sec. Bldg., archt. Zumwalt & Vinther, 929 Mercantile Sec. Bldg. and R. L. Rolfe, 2401-A Bryan St., engrs. CD 3/12.

Mo., Liberty—STUDENT UNION—Bids After 9/15—William Jewell College, Liberty, 3 story, 55x121 ft., student union bldg., 1 story, 50x75 ft. rein.-con. wing, 3 story, 105x165 ft., T-shaped dormitory, $750,000. Edward W. Tanner & Assoc., 310 Ward Parkway, Kansas City 12, Mo., archts. CD 3/1.

HEAVY CONSTRUCTION—LB & CA

▲ Barbarossa-Nodlund, St. Cloud, Minn. CA $1,137,540. storm sewer proj. No. 4, BLOOMINGTON (P. O. MINNEAPOLIS), MINN. Village, H. E. Kossum, clk., Bloomington, Minn. CD 8/8, under LB.

BUILDINGS—LB & CA

Kuni-Jacobsmeyer Co., 8015 Forsyth Blvd., Clayton 24, Mo. Owner Builds. Est. $800,000. 43 brick, concrete RESIDENCES in Cresthaven subdivision on Sterling Dr. near U. S. No. 66, CRESTWOOD, (St. Louis 23 P. O.), MO.

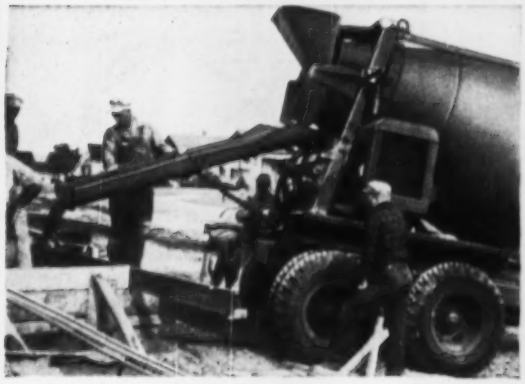
Boston Development Co., c/o J. D. Boston, 1410 Lamar St., Amarillo, Tex. Owner Builds. $362,225, 36 DWELLINGS; $355,000, 34 DWELLINGS, AMARILLO, TEX. CD 7/12.

▲ Dallas Independent School Dist., 3700 Ross St., Dallas, Tex., rejected bids July 7, Wm. B. Travis SCHOOL, DALLAS, TEX. (Correction-status). CD 7/16, under CA.

Jansen Constr. Co., Box 5692, Dallas, Tex. CA, $776,800. Base bid, MUNICIPAL bldg. alterations, and remodeling, DALLAS, TEX. City, City Hall, Main & Harwood Sts., Dallas, Tex. Bids July 23. CD 8/10, under LB.

▲ Robert E. McKee, General Contractor Inc., 1918 Texas St., El Paso, Tex., CA, $3,200,000. (Base Contract) 165,000 sq. ft. structural steel, marble, granite exterior OFFICE bldg. Braniff International Airways, DALLAS, TEX. Exchange Park Co., 6413 Maple Ave. Dallas, Tex. Bids July 18. CD 8/4, under LB.

(Continued on page 94)



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▲ **Spartan Constr. Co.**, Box 14297, Houston, Tex. LB $1,397,494. 80,000 sq. ft. masonry SCHOOL, DEER PARK, TEX. Deer Park Independent School Dist., Deer Park, Tex. Bids July 31. CD 7/17.

H. A. Joiner, Contractor, 2334 N. Haltom St., Fort Worth, Tex., Own Forces. $378,185, 36 DWELLINGS; $366,995, 33 DWELLINGS, FORT WORTH, TEX. CD 6/7.

▲ **Stewart-Hibbler Constr. Co.**, 710 Redan St., Houston, Tex., Own Forces. $371,510, 36 DWELLINGS; $353,000, 31 DWELLINGS; $361,120, 33 DWELLINGS, HOUSTON, TEX. Grand total $1,085,630. CD 6/27.

▲ **The Austin Co.**, M. & M. Bldg., Houston, Tex. CA, $1,000,000. 33 LABORATORY UNITS and 32 office bldgs., HOUSTON, TEX. Schulmberger Well Surveying Corp., 5000 Block Gulf Freeway, Houston, Tex. CD 2/12/51.

▲ **General Electric Co.**, River Rd., Schenectady, N. Y. CA, $6,500,000. 240,000-kw GENERATOR PLANT unit at Sam Bertron Station on Ship Channel near San Jacinto Monument, HOUSTON, TEX. Houston Lighting & Power Co., 1016 Walker St., Houston, Tex. CD 1/13.

Ayrshire Bldg. Corp., 7625 Academy St., Houston, Tex. CA, $353,300, 21 DWELLINGS; $376,550, 29 DWELLINGS, HOUSTON, TEX. Arthur Coburn, Trustee c/o Ayshire Corp., 6825 Academy St., Houston, Tex. CD 7/26.

▲ **Spaw-Glass, Inc.**, 2411 Times Blvd., Houston, Tex. LB $503,161. four 2-story student DORMITORIES and dining hall; LB $528,826. six 2-story dormitories, HUNTSVILLE, TEX. Sam Houston State Teachers College, Huntsville, Tex. Bids Aug. 3. CD 7/3.

▲ **Olson Constr. Co.**, Box 4058, South Denver Station, Denver, Colo. CA approx. $1,000,000. 1 story, 500,000 sq. ft. WAREHOUSE and office, DENVER, COLO. Caterpillar Tractor Co., 600 W. Washington St., Peoria, Ill. Awarded Aug. 3. CD 4/25.

▲ **Olson Constr. Co.**, Box 4058, S. Denver Station, Denver, Colo. LB $1,286,212, est. $1,400,000. general constr., 2 story 100,000 sq. ft. brick high SCHOOL, STERLING, COLO. School Dist. No. 12, Sterling, Colo. CD 7/27.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA. 8/31—Los Angeles County Flood Control Dist., 2250 Alcazar St. (Proj. No. 126), storm drain pump Dist. No. 4, Long Beach. $590,000. H. E. Hedger, c/o owner engr. CD 11/7/52.

▲ **Calif., Long Beach**—BA. 9/6—Long Beach Harbor Dpt., 1333 El Embarkadero St., Ninth St. bridge, $3,000,000. Moffatt & Nichols, 122 W. 5 St., engrs. CD 7/6.

HEAVY CONSTRUCTION—LB & CA

▲ **Haskell Plumbing & Heating Co.**, 1509 Cornwall St., Bellingham, Wash., CA. Est. $1,000,000. installing natural gas distribution lines in Bellingham, Anacortes and Burlington, WASHINGTON. Cascade Natural Gas Co., Securities Bldg., Seattle 1, Wash. CD 8/12/55.

† **Parker-Schram Co.**, Builders Exchange Bldg., Portland, Ore., CA. $581,808. Chief Joseph Powerhouse-Switchyard Line No. 4 and Chief Joseph-Snohomish Line No. 4, Inv. 8084, Douglas, Chelan and King Counties, WASHINGTON. Bonneville Power Admin., 1001 N. E., Lloyd Blvd., Portland, Ore. Bids July 16, awarded July 25. CD 7/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.

Calif.—**Griffith Co.**, 1060 South Broadway, Los Angeles 15, Calif., LB $2,172,044 (5 bidders), grading, surf., 1.6 mi. 8-lane divided freeway on new alignment U. S. 101 between 0.3 mi. east of Lankershim Blvd. and 0.2 mi. north of Moorpark St.; and off ramp overcrossing on Ventura Blvd. and undercrossing on Moorpark St., Los Angeles, Los Angeles Co.;

Calif.—**Osborn Co.**, 3200 Edgecliff Lane, Passadena, Calif., LB $146,721 (3 bidders) channelization, modifying traffic signal sys. and highway lighting Huntington Dr.-Foothill Blvd. between Rte. 161 near Monrovia and Azusa Underpass, Los Angeles Co.;

Calif.—**Paul V. Pollock**, 211 N. Olive St., Ventura, Calif.-LB $78,100 (6 bidders) seal coating 31 mi. highways various locations, Ventura, Los Angeles and Orange Counties. Bids Aug. 9. CD 7/13.

† **George Pollock Co.**, Box 903, Sacramento, Calif. LB $799,893. est. $751,469. Putah diversion dam and Putah South Canal, Sta. 12 plus 46.44 to 14 plus 10, Solano Proj., Spec. DC 4716, CALIFORNIA Bureau Reclamation, Dpt. Interior, Winters, Calif. Bids Aug. 7. CD 7/26.

▲ **R. A. Wattson Co.**, Box 747, North Hollywood, Calif., LB $1,732,703, (7 bidders) middle feeder pipe line from South San Gabriel to Garvey Reservoir, MONTEREY PARK, CALIF., Metropolitan Water Dist. of Southern Calif., 306 W. 3 St., Los Angeles, Calif. Bids Aug. 9.

BUILDINGS—LB & CA

▲ **Utah Constr. Co.**, 144 E. Broadway, Salt Lake City, Utah, CA. Est. $1,250,000. research and DEVELOPMENT FACILITY near Municipal Airport, SALT LAKE CITY, UTAH. Sperry-Rand Corp., 30 Rockefeller Plaza, New York, N. Y. Bids June 30. CD 7/6.

Wall, Bartram & Sanford, Box 488, Junction City, Ore. LB $824,900. (4 bidders) men's DORMITORY, University of Oregon, EUGENE, ORE. Bd. Higher Educ., University of Oregon, Eugene, Ore. Bids July 27. CD 6/21.

▲ **A. V. Peterson Co.**, Box 2368, Portland, Ore. CA $1,937,425. HOSPITAL, MEDFORD, ORE. Medford Hospital Assn., Medford, Ore. Bids June 12, awarded July 26. CD 6/20, under LB.

▲ **Frank C. Ralph & Son**, 2204 N.E. Alberta St., Portland, Ore. LB $1,235,282. (3 bidders) retirement HOME annex, MILWAUKEE, ORE. Oregon Methodist Homes, Inc., Willamette View Manor, Milwaukee, Ore. Bids July 23. CD 7/5.

Juhr & Sons, 1339 S.E. Gideon St., Portland, Ore. CA $977,000. (5 bidders) high SCHOOL, MILWAUKEE, ORE. Clackamas Union High School Dist. 5, Milwaukee, Ore. Bids July 26. CD 7/5.

A. V. Petersen, Box 2368, Portland, Ore. LB $681,681. (6 bidders) STUDENT CENTER, Portland State College, PORTLAND, ORE. Bd. Higher Education, University of Oregon, Eugene, Ore. Bids Aug. 3. CD 7/12.

Bell & Valdez, 1044 116 St. N.E., Bellevue, Wash., Day Labor, $746,960. 60 HOUSES, S. E. 8 and Eastgate Blvd., BELLEVUE, WASH. CD 12/15/54.

Godbey Developers, 10820 S. Norwalk St., Santa Fe Springs, Calif., CA. $626,400. 54 frame, stucco DWELLINGS, Tract 1979, ANAHEIM, CALIF. Enchanted Lands, 10820 S. Norwalk St., Santa Fe Springs, Calif.

Leon Slovin, 496 S. San Vicente Blvd., Los Angeles, Calif., CA. $504,134 Grovecenter SCHOOL, and two utility bldgs., West Covina, COVINA, CALIF. Covina School Dist., 17850 E. Rowland Ave., Covina, Calif. Bids June 18, awarded Aug. 2. CD 7/2, under LB.

▲ **Fluor Corp. Ltd.**, 2500 Atlantic St., Los Angeles, Calif., CA. Approx. $3,000,000. design and construct, crude handling FACILITIES, EL SEGUNDO, CALIF. Standard Oil Co. of California, 225 Bush St., San Francisco, Calif. Construction in November. CD 8/18/52.

▲ **Dinwiddie Constr. Co.**, Crocker Bldg., San Francisco, Calif., CA. $4,500,000. FACTORY and HEADQUARTERS BLDG. incl. 500,000 sq. ft. floor space, incl. 4-story offices; 2 story sect. factory, rein.-conc. constr., OAKLAND, CALIF. Marchant Calculators, Inc., 1475 Powell St., Oakland, Calif. Albert F. Roller, 1st Natl. Bank Bldg., Crocker St., San Francisco, Calif., archt.; Dudley Deane & Assocs., 58 2nd St., San Francisco, Calif., mech. engrs.; H. J. Brunnier, Sharon Bldg., San Francisco, Calif., structural engr.; Lyle Patton, 1st Natl. Bank Bldg., Crocker St., San Francisco, Calif. electrical engr. CD 12/11/53.

Crown Constr. Co., 5059 W. Pico Blvd., Los Angeles, Calif., LB $577,633. Palmdale SCHOOL No. 4, PALMDALE, CALIF. Palmdale School Dist., Box 218, Palmdale, Calif. Bids July 27. CD 7/16.

Covina Cienega Development Co., 4529 Sepulveda Blvd., Sherman Oaks, Calif. Owner Builds, $860,000. 75 frame, stucco DWELLINGS, Calora St., Rimhurst Ave., etc., SAN DIMAS, CALIF.

Ralph Larsen & Son, 64 South Park St., San Francisco, Calif., CA. $769,213. general contract, CLASSROOM Bldg. No. 3, SAN FRANCISCO, CALIF. State Div. Archt., P. Wks. Bldg., Sacramento, Calif. Bids July 31, awarded Aug. 3. CD 8/8, under LB.

Haas & Haynie and Utah Constr. Co., 100 Bush St., San Francisco, Calif., CA. $750,000. mfg. PLANT, SOUTH SAN FRANCISCO, CALIF. J. L. Stuart Mfg. Co., 37 Front St., San Francisco, Calif.

▲ **T-S Constr. Engineers Inc.**, 600 St. Paul St., Los Angeles, Calif., CA. $2,810,500. 365,000 sq. ft., concrete, stone DEPARTMENT STORE, WEST COVINA, CALIF. May Co. Department Store, 801 S. Broadway, Los Angeles, Calif. CD 9/9/54.

CANADA

BUILDINGS—BA

Ont., Toronto—FACTORY—BA 8/28—Minneapolis-Honeywell Regulator Co. Ltd., Vanderhoof Ave., 1 story, 130,000 sq. ft. factory, 35-acre site at Birchmont Ave. and Ellesmere Rd., $900,000. Gordon S. Adamson & Assocs., 52 St. Clair Ave. E., Toronto, archts. Wallace, Carruthers & Assocs., Ltd., 93 Yorkville Ave., Toronto, engr. CD 2/27.

Newfoundland, St. John's—SCHOOL—BA 9/15—Roman Catholic Episcopal Corp., 4 story, rein.-conc. girls' high school, Bonaventure Ave., $500,000. Plans deposit $150. John E. Hoskins, 91 Waterford Bridge St., and Durnford, Bolton, Chadwick & Ellwood, 1480 Sherbrooke St. W., Montreal, Que., archts.

BUILDINGS—LB & CA

▲ **Dawson & Hall Ltd.**, 775 Clark Dr., Vancouver, B. C., CA. $1,710,548. HOSTEL and SCHOOL for Dpt. Northern Affairs and National Resources, FORT SMITH, N.W.T. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Aug. 3.

▲ **Arthur J. Lennox Contractors Ltd.**, 44 Upjohn Rd., Toronto, Ont., CA. $1,400,000. 1 story, 125,000 sq. ft., brick, concrete, steel frame, FACTORY EXPANSION, Bradford St., BARRIE, ONT. Canadian General Electric Co. Ltd., 212 King St. W., Toronto, Ont. Bids July 24, awarded Aug. 7. CD 7/6.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont., CA. Est. $500,000. (4 bidders) 4 story, bsmt., 45x127 ft., HOSPITAL, BROCKVILLE, ONT. St. Vincent de Paul Hospital, Pine St., Brockville, Ont. McGregor, Anderson & Beynon, 2742 Yonge St., Toronto, engrs. Bids Aug. 3, awarded Aug. 6. CD 7/12.

Cement Plant Constructors, Box 1110, Picton, Ont., CA. Est. $750,000. cement and aggregate PLANT and bulk distr. plant, PICTON, ONT. Lake Ontario Portland Cement Co. Ltd., Picton, Ont.; Federated Consultants, Ltd., 79 Scollard St., Toronto, Ont. and Burns & Roe of Michigan, Inc., 417 Pelissier St., Windsor, Ont., engr.

Cement Plant Constructors, Box 1110, Picton, Ont., CA. Est. $750,000. bulk distribution PLANT, silos, bagging plant, warehouse, facilities for coarse aggregate, rock, etc. Cherry St., TORONTO, ONT. Lake Ontario Portland Cement Co. Ltd., Picton, Ont.; Federated Consultants, Ltd., 79 Scollard St., Toronto, engr. Bids Aug. 6.

▲ **A. Janin & Co. Ltd.**, 1460 Sherbrooke St. W., Montreal, Que., CA. Est. $1,000,000. 8 story, 2 bsmnts., brick, stone HOTEL ADDN., MONTREAL, QUE. Ritz-Carlton Hotel Co. of Montreal Ltd., 1228 Sherbrooke St. W., Montreal, Que. Grattan D. Thompson, 1241 Guy St., Montreal, archt. Pierre M. D'Allemagne, 3180 Van Horne Ave., Mohtreal, engr. Awarded Aug. 3.

▲ **E. G. M. Cape & Co.**, 4898 Western Ave., Montreal, Que., CA. Est. $4,000,000. FACTORY and offices, St. John's Rd. near Trans-Canada Hy., Pointe Claire District, MONTREAL, QUE. Procter & Gamble Co. of Canada Ltd., Burlington St. E., Hamilton, Ont. J. A. McCuaig, c/o owner, ch. engr. Awarded Aug. 3. CD 1/31.

WATER SUPPLY

Conn., Bristol—City, 20 in. pipe line from old marsh reservoir via Old Marsh and Pinehurst Rds. and Peacedale St. to Burlington Ave., $100,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., consult. engrs. Clair M. Pfennig, city engr. CD 2/28/49.

▲ **Kan., Topeka**—City, City Hall, engineers employed to make survey for necessary extens., impres. to water supply, 10 year proj.; Servis-Van Doren & Hazard, 2410 Topeka St., Topeka, consult. engrs.

O., Highland Heights—VILLAGE, Town Hall, Highland Rd., bond election Nov. 6, exten. water lines, $200,000. Pease Engr. Co., 3482 Lee Rd., Cleveland, Zone 20, consult. engr. CD 11/14/50.

O., Willoughby—City, City Hall, water lines to serve Lakefront area, $210,000. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs. CD 7/13/44.

▲ **Okla., Ardmore**—City, $1,250,000 bond election Aug. 14, WW extens. Rex Collins, McAlester, consult. engr. CD 10/27/54.

Okla., Harrah—City, voted bond July 31, WW sys., $100,000. O. G. McCling, city engr.

Okla., Pawluska—City, $400,000 bond election Aug. 21, reservoir water supply, V. V. Long & Co., Colcord Bldg., Oklahoma City, consult. engrs. CD 12/15/54.

Tex., Alpine—City, City Hall, 8 or more water supply wells, $90,000; domestic water reservoir, $100,000; water supply line to Sul Ross College, $50,000. Ashley G. Classen, 504 Kansas St., El Paso, consult. engr.

Tex., LaMarque—Galveston Co. Water Control & Impt. Dist. 3, Galveston, W. W. $100,000. Wyatt C. Hedrick, 5201 Fannin, Houston, consult. engr. CD 12/8/54.

Tex., Pampa—City, City Hall, water lines, $675,000; water supply, $75,000; elevated water storage tank, $60,000. Roberts, Merriman & Bowden, 218 N. Russell St., Lubbock, consult. engrs. CD 7/6.

Tex., Pt. Lavaca—City, water supply line from well 5 miles out of city limits, $100,000. deep water supply well 5 miles from town on leased site, $60,000. CD 5/24/48.

Que., Grand'mere—City, Town Hall, waterworks impres., watermain & pumping station, $175,000. Philias Vellemure, c/o owner, engr.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Los Angeles County, Hall of Records, sanitary sewers (C. 1. 1753) on 123 St., Athens, $202,000. J. A. Lambie, c/o owner, engr.

▲ **Ind., Shelbyville**—City, sewage treatment plant, $1,250,000. Al. LeFeber & Assoc., 2933 Woodburn Ave., Cincinnati, O. consult. engrs. Work in February or March 1957. CD 6/7/54.

Minn., Mountain Lake—Village, H. Goosen, Clk., sewer system and sewage disposal plant, $320,000. CD 12/20/51.

N. J., West Caldwell—West Caldwell Borough, sewerage system in Caldwell Gardens, north side of Bloomfield Ave. from Kirkpatrick Lane to De Baum Ave., as local improvement, $262,500; force main and pumping station in Kirkpatrick Lane near Bloomfield as Borough improvement for pumping sewage from low-lying Caldwell Gardens, $147,000. Allen Summerville, 368 Bloomfield Ave., Caldwell, consult. engr.

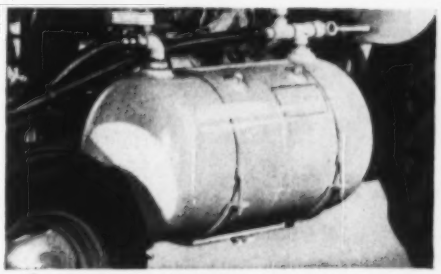
N. J., Newton—Water & Sewer Comn., 57½ Trinity Pl., 16 in. main for 8 mi. from the reservoir, $500,000. Hampton Byran, 57½ Trinity Pl., consult. engr.

(Continued on page 97)

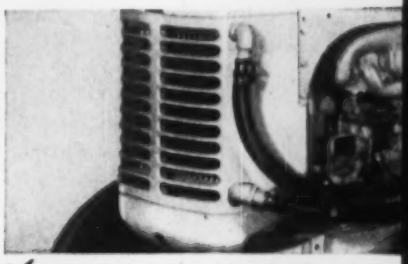
Check These Points Thoroughly
before buying a combination Tractor-Compressor

Absence of these engineering design features can mean less work done and more cost on your next job.

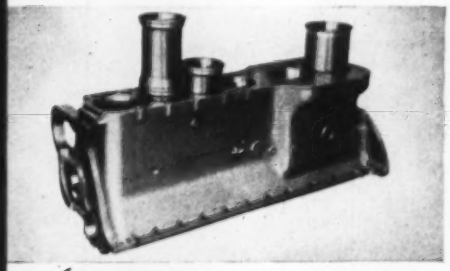
In recent years, combination tractor-compressor units have been increasingly popular. This is due, in large measure, to the fact that machines of this type are much easier to keep at work all day than their counterparts: an ordinary tractor and a standard portable compressor. To insure that you get the maximum benefit from any combination tractor-compressor unit, check these important points before buying.



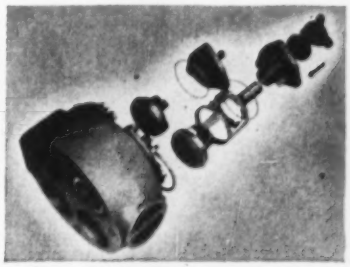
✔ **Location of the compressor air receiver** is important. The air receiver must be exposed to give you cool outside air in every operating condition, and should not hug the hot engine or be located next to the gas tank.



✔ **An air-cooled aftercooler** permits the tractor-compressor to deliver clean, cool, dry air hour after hour. Best cooling results can not be obtained from those units using a water-cooled manifold as an aftercooler.



✔ **Replaceable wet sleeves** in the cylinder construction of your tractor-compressor eliminate costly reboring jobs, and give you more efficient cooling by directing a 360-degree flow of water around each individual cylinder.

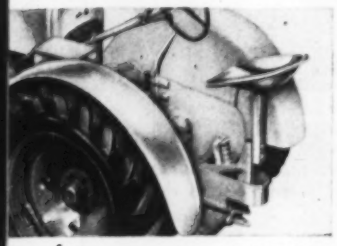


✔ **Interchangeable and replaceable compressor valves** let you get longer service life from your tractor-compressor. This feature also lowers your maintenance costs and assures top performance.

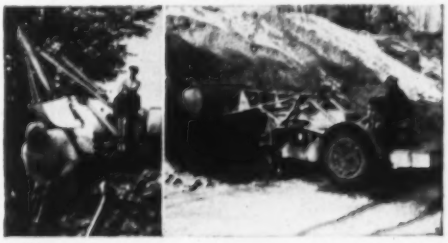
✔ **Plenty of operating space** is important, too. Be sure that your tractor-compressor permits the operator to drive and work efficiently and safely. He should be able to stand up while operating the unit.

✔ **A hood that is easily and quickly removable** helps reduce the time needed for minor repairs on your tractor-compressor. It permits preventive maintenance practices, too. Ask for this feature.

✔ **The fastest possible travelling speed** is a time-saving feature of the tractor-compressor. Be sure that your unit can get you from job to job in the shortest possible time.

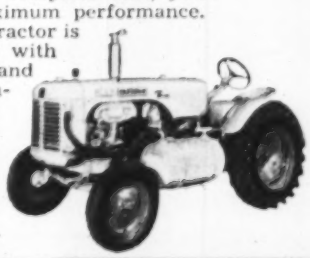


✔ **Wrap-around fenders are a must.** This is a major safety factor, particularly when the tractor is operating on rough ground or on highways and streets.



✔ **Many attachments for use with the unit** give you greater job versatility. Be sure your machine is designed for use with attachments such as the front-end loader, backhoe, and other tools.

✔ **If it's built and designed by one manufacturer** as a complete unit, you can be sure of maximum performance. Make sure that the tractor is designed to "work" with the compressor unit and is not an ordinary industrial tractor. The engine, too, should be a product of the manufacturer offering the unit. Your unit should "belong together."



These features can be found only in the Le Roi Tractair — a combination 42-hp wheel tractor and a 125-cfm air compressor. Be sure you get *all* the savings in time and money that the engineering design of Tractair offers you. Check before you buy.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, heavy-duty industrial engines, and air tools. Write us for information on any of these products.

7-51

Walt Whitman Bridge, Philadelphia – Gloucester, N. J.

Easy does it . . .

Two men simply couldn't lift an ordinary bridge railing as large as this. Easy does it – when bridge railings are aluminum-extruded by Flynn.

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937 Radcliffe Road, Towson, Md.
Telephone: VAlley 3-2090

FLYNN
EXTRUSIONS

(Continued from page 94)

O., Cuyahoga Falls—Village, enlarging sewage treatment plant, $200,000. E. D. Barstown, 163 N. Union St., Akron, consult. engr. CD 7/12/55.

▲ **O., Niles**—City, City Hall, sewage treatment plant, $3,000,000. Floyd G. Browne & Assoc., Marion, consult. engrs. CD 10/28/54.

Okla., Ardmore—City, $900,000 bond election Aug. 14, sewage disposal plant. Rex Collins, McAlester, consult. engr. CD 12/24/52.

Tex., Dallas—Centex Constr. Co., 4606 Greenville, sanitary sewers, $77,500; storm sewers, $77,000, in area Oakland Hills, in Oak Cliff.

Tex., Farmers Branch—Centex Constr. Co., 4606 Greenville, sanitary sewers, $75,000; storm sewers, $75,000, in area Johnson Park Subdivision.

Tex., Pampa—City, sewage disposal plant, $90,000; sanitary sewers, $600,000. Roberts, Merriman & Bowden, 218 N. Russell St., Lubbock, consult. engrs. CD 7/6.

Tex., San Antonio—H. B. Zachry Properties, Inc., 310 S. St. Marys St., storm sewers, $78,000; sanitary sewers, $77,600, on Old Wow site, off New Braunfels Ave.

Ont., Tillsonburg—Town, Town Hall, sewage disposal system activated sludge type, storm sewers, $500,000. R. V. Anderson & Associates Ltd., 136 Felbrigg Ave., consult. engrs.

Que., Grand'mere—City, Town Hall, imprv. sewers in main streets, $250,000. Philias Villemure, c/o owner, engr.

BRIDGES

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

New Haven Co.—high level bridges, Rubber Ave. and Prospect St., Naugatuck, $2,000,000. Edwards, Kelsey & Beck, 250 Park Ave., New York, N. Y., consult. engrs. Curtis G. Mellen, state hy. engr.

Conn., Milford—Town, bridge over Wepawaug River, south of New Haven Ave., $100,000.

STREETS AND ROADS

Calif., Fairfield—Solano Co. Court House, street imprvs. Vallejo, FY 1956-57, $265,000. Wm. Jones, Court House, county engr.

▲ **OHIO**—State Hy. Dpt., Columbus,

300 mi. Conneaut-Cleveland-Cincinnati Freeway, 5 mi. from Rte. 8 to South Corporation Line of Bedford, $14,000,000. Howard, Needles, Tammen & Bergendoff, 1805 Grand Ave., Kansas City 8, Mo., consult. engrs.

16.3 mi. from relocated Rte. 46 to Pennsylvania Line, $17,500,000. Shaffer Parrett & Assoc., 137 Lexington Ave., Mansfield, consult. engrs.

Ashtabula Co.—16.1 mi. from Rte. 528 to New Rte. 46, $24,000,000. Charles L. Barber & Assoc., 222½ Huron St., Toledo, consult. engrs.

Lake Co.—11 mi. from north edge of Mayfield Heights to Rte. 306, $30,000,000. Michael Baker, Jr., P. O. Box 111, Rochester, Pa., consult. engr.

19.8 mi. from Rte. 306 to Rte. 528, $34,000,000. Capitol Engineering Assoc., West Church St., Dillsburg, Pa., consult. engrs.

Pennsylvania—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg, relocation of New Stanton Interchange with reconstr. of Rte. 119, Westmoreland Co. $500,000. CD 10/28/53.

Tex., Austin—Northway Great Development, Inc. c/o S. Rebb Ruff, plans by Fehr & Granger, 502 E. 5th St., hard paved auto parking center between N. Lamar and Guadalupe Sts. for shopping center zone. $150,000.

Tex., Pampa—City, City Hall, street imprvs. & paving, $720,000. Roberts, Merriman & Bowden, 218 N. Russell St., Lubbock, consult. engrs.

EARTHWORK, WATERWAYS

▲† **Kansas**—U. S. Eng., Federal Office Bldg., Kansas City, Mo., Tuttle Creek Dam, Big Blue River, Manhattan, Riley and Pottawatomie Counties, $9,000,000. Appropriated. CD 9/12/55.

▲† **Kansas**—U. S. Eng., Federal Office Bldg., Kansas City, Mo., flood protection, Arkansas River, Wichita and Valley Center, $1,163,000.

Tex., Pt. Lavaca—Aluminum Co. of America, deep water docks on deep water channel in Calhounty running to near Alcoas Plant. $500,000.

Tex., Rosenberg—Ft. Bend Co. Water Control Dist., watershed protection and flood prevention dam proj. on Turkey Creek covering 18,880 acres land. $453,360.

▲† **Vermont**—U. S. Eng., 150 Causeway St., Boston, Mass., Ball Mountain Reservoir on Connecticut River at Brattleboro, $2,300,000 appropriated.

AIRPORTS

Neb., McCook—AIRPORT—City, airport imprvs. addnl. runway extensions. $100,000.

Neb., Sidney—AIRPORT—City, addnl. airport imprvs. widening, extending runways. $150,000. CD 2/2/55.

Tex., Greenville—RUNWAYS—Temco Aircraft Corp., Greenville, lengthening of runways, $440,000.

Alaska, Juneau—AIRPORT EXPANS.—City, City Hall, plans by Foss and Qgen, Juneau, municipal airport expan. $500,000. CD 5/1.

FOREIGN

Syria—Secretariest of Ministry, P. Wks. and Communications, Damascus, selected Segtraco (Societe d'etudes des grands travaux coloniaux) of Belgium, to prepare plans for 750 km. railroad connecting Latakia appeppo, Dar El-Zour and El Hamishly. Final report must be prepared in 20 months. American engineers tried for job.

PUBLIC BUILDINGS

▲ **Calif., Los Angeles**—SCHOOLS—Bd. of Educ., 1425 S. San Pedro St., plans by Lunden, Hayward & O'Connor, 548 S. Spring St., frame and stucco Cimmaron Ave. School addns., $416,500; frame and stucco 132nd. St. School, 462,900; plans by Gregery Aiu, 2305 Hyperion Ave., frame and stucco 153rd St. School $440,270; plans by Paul R. Hunter, 5758 Wilshire Blvd., Serrania Ave. School, Woodland Hills District, $505,000. CD 4/8/55.

▲ **Calif., Los Angeles**—SCHOOLS—Los Angeles Bd. Educ., 1425 S. San Pedro St., strengthening and modernizing Marianna Ave. School. $500,000. John Case, 2901 E. Olympic Blvd., consult. engr.; plans by A. C. Zimmerman, 2439 Hyperion Ave., Parkman Junior High School, Canoga Park, $2,000,000. CD 4/8/55.

Calif., Redlands—SCHOOL—Redlands School Dist., 653 E. Fern Ave., plans by Ulmer & Rack, 229 E. State St., Edward M. Cape Junior high school addn. $500,000. CD 2/7.

▲ **Colo., Boulder**—CHEMISTRY—University of Colo., Campus, plans by Huntington & Breisford, 370 W. 7th, Denver, present one story chemistry bldg. addn. $1,400,000. Trautwein & Howard, 1411 Walnut St., Philadelphia, Pa., consult. engrs. CD 5/2.

▲ **Conn., Greenwich**—SCHOOL—Town, Greenwich, plans by J. Gordon Carr, 80 W. 40 St., New York, N. Y., west junior high school, Post Rd., Byram. $2,000,000. CD 8/12/54.

▲ **Conn., Wallingford**—SCHOOLS—Town, plans by Ketchum, Gina & Sharpe, 227 E. 44 St., New York, N. Y., West Side elementary school, $750,000; East Side elementary school Durham Rd., $550,000.

Conn., Wilton—SCHOOL—Town, plans by Sherwood, Mills & Smith, 65 Broad St., Hartford, 40,000 sq. ft. junior high school alterations, addns. $850,000. B. F. Greene, 100 W. 42 St., New York, N. Y., consult. engr. Bids in Nov. CD 6/18.

Del., Greenwood—SCHOOL—Greenwood School District, plans by Stanhope & Manning, 902 Orange St., Wilmington, school addn., $600,000. CD 2/10/55.

▲ **Fla., Miami**—SCHOOLS—Dade Co. Bd. of Pub. Instruction, Admin. Bldg., 275 N.W. 2 St., plans by Steward & Skinner, 223 S.E. 1st St., Palm Springs Junior High School, N.W. 115 St. & Ludlum Rd., $1,000,000; plans by Irving Horsey, 9822 N.E. 2 Ave., Miami Shores Village, Norland Senior High School, 1055 N.W. 193 St., $1,500,000. CD 11/3/55.

▲† **Idaho, Arco**—ASSEMBLY and MAINTENANCE—Atomic Energy Comn.; Idaho Operations Office, Idaho Falls, 150x285 ft. assembly and maintenance bldg. addn., Aircraft Nuclear Propulsion area of National Reactor Testing Station with remodeling of existing bldg. $1,600,000. Bids next month. CD 3/24/49.

▲ **Idaho, Boise**—HIGH SCHOOL—School Bd., Boise, voted bonds July 31, for new high school, renovation of old high school. $2,118,000. CD 7/27.

Ind., Cowan—SCHOOL, etc.—Cowan School Bldg. Corp., plans by Hamilton & Graham, archts., 411 Western Reserve Bldg., Muncie, steel, bar joists, masonry, concrete school and gymnasium. $430,000.

Ind., Gary—SCHOOL—School, City of Gary, 524 Garfield St., plans by David J. Katz, 355 Arthur St., masonry, struct. steel, conc. Garfield elementary school, $600,000.

Ind., Madison—SCHOOL—Bd. Educ., Madison Consolidated School Dist., plans by Walker, Applegate, Oaks and Ritz, 218 Eisby Bldg., New Albany, grade school.

▲† **Md., Bethesda**—LABORATORY—General Services Admin., Pub. Bldgs. Service, General Services Bldg. 19 and F Sts. N.W., Wash. 25, D. C., plans by Ted Englehardt, 933 Gist Ave., Silver Spring, 5 story, bsmt., 70,380 sq. ft. air-conditioned biologics standards laboratory, $3,045,000. Constr. in 1957.

▲ **Mass., Boston**—STATE ARCHIVES BLDG.—State, Dpt. P. Wks., 100 Nashua St., Boston, state archives bldg. on State House grounds, $1,005,000. CD 2/9/54.

▲ **Mich., Ecorse**—SCHOOL—McCann School Dist., Ecrose Twp., George McCormick, supt. of schools, 6623 Allen St., Allen Park, $3,000,000 bonds election Sept. 17, schools.

Mich., Hazel Park—SCHOOL—City, Bd. Educ., 22750 Highland St., plans by Jahr-Anderson Assoc., Inc., 15011 Michigan Ave., Dearborn, school, $350,000. CD 6/15.

▲ **Mich., Inkster**—HOUSING—Inkster Public Housing Comn., Inkster, 200 housing units, $2,900,000.

Minn., Buffalo—SCHOOL—Bd. Educ., E. L. Melin, clk., voted $550,000 bonds July 24, elementary school, remodeling existing high school, $500,000. Patch & Erickson, 333 Ninnetonka Ave. S., Wayzata, archts. CD 7/19.

▲ **Minn., Waseca**—SCHOOLS—Bd. of Educ., E. C. King, clk., two elementary schools, $1,400,000.

▲ **Mo., Kinloch (St. Louis 21 P.O.)**—HOUSING—Kinloch Housing Auth., c/o Wm. Arnett, mayor, City Hall, Lix and Scott Aves., Zone 21, plans by Hellmuth, Obata & Kassabaum, 315 N. 10 St., St. Louis, Zone 1, 100 housing units, 112 acre tract from Lix Ave. to eastern city limits along Ferguson limits and Scott Ave. to southern city limits. $1,484,600. CD 5/8.

Neb., Falls City—POWER PLANT—City, power plant expansion, $500,000. Fulton & Cramer, 922 Trust Bldg., Lincoln, consult. engrs.

Neb., Sidney—POWER PLANT—City, power plant expansion. $650,000.

▲ **N. J., Kearney**—SCHOOL—Bd. Educ. plans by Kruger & Favx, 11 Hill St., Newark, 40 room school. $1,000,000-$2,000,000.

▲ **N. J. Mendham**—Chester—SCHOOL—West Morris Regional High School Dist. Plans by Mickelewright & Mountford, E. Stuyvesant Ave., Trenton, new Regional High School, $1,800,000.

▲ **N. J., Ringwood**—Wanaque—SCHOOL—Bd. Educ., Lakeland Regional Sch. Dist. Plans by Arthur Rigolo, Rt. 46 and Grove St., Clifton, school. $1,250,000.

▲ **N. J., West Milford**—SCHOOL—Bd. Educ., Borough of West Milford, RFD 2, Paterson, plans by Styze E. Greydanus, 142 Fairview Ave., Prospect Park, 10 classroom elementary school, Marshall Hill Rd., $500,000; 12 room Junior High School, with auditorium, gymnasium, cafeteria, science room, etc., Macopin Rd. $500,000.

▲ **N. Y., Bellmore**—SCHOOLS—Mepham Central High School Dist., North Bellmore, plans by Frederic P. Wiedersum Assoc., 85 W. Hawthorne Ave., Valley Stream, Junior High School, Newbridge Rd. and Grand Ave., Bellmore, $3,000,000; Senior High School, Camp Ave. and Meadowbrook Rd., North Merrick, $5,000,000. CD 4/27.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. of Ed., Bur. of Constr., 42-15 Crescent St., Long Island City, plans by Tito Di Vincenzo, 135 E. 65 St., public school 142, $1,800,000.

▲ **N. Y., Ellicott Creek**—SCHOOL—Sweet Home Central School Dist. No. 7, Ellicott Creek, defeated $2,800,000 bonds July 12, junior-senior high school. CD 7/2.

▲ **N. Y., New York**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, plans by Perkins & Will, 171 E. Post Rd., White Plains, P.S. 7, 1917-31 Lexington Ave., Proj. E-357, $2,100,000.

N. Y., Suffern—SCHOOL—Central School Distr. No. 1, Ramapo Twp., plans by Starrett & Van Vlerr, Reginald Marsh, Assoc. Archt., 267 Fifth Ave., New York, elementary school on Cyprus Rd., $550,000.

N. Y., West Islip—SCHOOL—Bd. of Education, plans by Frederic P. Wiedersum Assoc., 85 West Hawthorne Ave., Valley Stream, elementary school, $900,000.

O., Beachwood—Beachwood Bd. of Ed., 2460 Fairmount Blvd., Cleveland, plans by Fulton, Krinsky & Dela Motte, 6014 Euclid Ave., Cleveland, high school, $550,000. CD 7/19/56.

O., Huron—SCHOOL—Huron School District, bond election Nov. 6, school, improving existing bldgs., $989,000. CD 11/11/55.

O., Leetonia—SCHOOLS—Leetonia School Dist., voted $514,137 bonds July 31, elementary and junior high school, and existing school addn.

O., Maple Heights—SCHOOL—Maple Heights Bd. Educ., A. E. Hadfield, Supt., 5500 Clement Dr., $500,000 bond election Nov. 6, junior high school, acquisition of new school sites. Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, Zone 20, archts. CD 11/11/55.

▲ **O., Marlboro**—SCHOOL—Marlington School Dist., $625,000 bond election Nov. 6, new high school, $1,025,000.

O., Parma—CITY HALL—City, City Hall, 6611 Ridge Rd., Cleveland, City Hall, $500,000.; Stickle & Assoc., 2422 Prospect Ave., Cleveland, consult. engrs. CD 11/5/54.

▲ **O., Ravenna**—HOSPITAL—Portage Co., Court House, plans by Dan Carmichael, 5 E. Long St., Columbus, Robinson Memorial Hospital addn., renovation. $1,825,000. Bids in Sept. CD 11/8/54.

O., Sandusky—SCHOOL—Perkins School Dist., bond election Nov. 6, schools addns., alterations, $950,000.

O., Toledo—DWELLINGS—Toledo Metropolitan Housing Auth., plans by Munger, Munger & Assoc., National Bank Bldg., 50 dwelling units, north end of Weiler Homes Proj. in East Toledo, $538,881. CD 5/16.

O., Toledo—FIRE STATION—City, John McCarthy, City Mgr., fire station, maintenance shop, at Indiana Ave. and Division St., $515,000. John H. Davis, city engr.

Okla., Waurika—SCHOOL—Bd. Educ., voted bonds May 29, high school, $350,000, Vahlberg Palmer & Vahlberg, 1323 N. Robinson St., Oklahoma City, archts. CD 5/15.

▲ **Pa., Aliquippa**—SCHOOL—Center Twp. School Dist., plans by B. J. McCandless, 239 Fourth St., Ellwood City, 2 story, brick, Junior High School addn. $1,500,000.

(Continued on page 99)

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Tex., Greenville—PLANT—City, production plant expansion. $500,000. Temco Aircraft Corp., Greenville, lessee.

▲ Tex., Longview—HOSPITAL—Gregg Memorial Hospital. Plans by Staub, Rather & Howze, 2814 Virginia St., Houston, and Wilson, Morris & Crain, 3330 Graustark, Houston, Gregg Memorial Hospital addn., $1,000,000. CD 1/4.

Tex., Pharr—SCHOOL—Pharr-San Juan-Alamo School Dist., defeated bonds July 21, school, $975,000. (Corrections-status.) CD 8/2.

Tex., Whitehouse—SCHOOL—Whitehouse School Dist. L. Higgins, supt., voted bonds July 24, school, $500,000.

▲† Va., Langley—HEADQUARTERS—General Services Admin., General Services Bldg., Wash. 25, D. C. plans by Harrison & Abramovitz, 630 5 Ave., New York, N. Y., Central Intelligence Agency bldg., near here, $46,000,000. CD 2/13.

Wis., Menasha—SCHOOL—Bd. of Ed.—Plans by Durrant & Berquist 666 Loras Blvd., Dubuque, Iowa, elemen. school, $580,000. CD 9/1/54.

† Wis., New Richmond—COURTHOUSE—General Services Admin., 575 Courthouse, Chicago, Ill., plans by G. J. Paul, 102 E. Grand Ave., Eau Claire, courthouse, $147,600.

Ont., Mimico—SCHOOL ADDNS.—Lakeshore Dist. Bd. Educ., 845 Lakeshore Rd., Hamilton, plans by Horwood & White, 229 Yonge St., Toronto, 2 story 75x250 ft. concrete block fdn., steel frame, masonry West Side School addn. 20x60 ft. South Side School addn. $400,000.

COMMERCIAL BUILDINGS

Calif., Los Angeles—OFFICE—General Insurance Co. of America, c/o Kenneth N. Neptune, archt., 441 N. Beverly Dr., Beverly Hills, concrete block office bldg., 15,000 sq. ft., Woodman Ave. and Roscoe Blvd. $500,000.

▲ Calif., Ontario—DWELLINGS—Hyman Weisel, 378 S. Glendera, West Covina, plans by L. C. Major Assocs., 1525 N. Garvey Ave., Pourona, 94 frame and stucco dwellings, Tracts 5200 and 5201, $1,000,000.

Conn., Rockville—CHURCH—Rockville Episcopal Church, 9 Ellington Ave., plans by Painchaud & Ryder, P. O. Box 225, Madison, new church bldg., $350,000. Fred S. Dubin & Assocs., 178 S. Whitney St., Hartford, consult. engrs. Henry P. Fisterer, 11 Whitney Ave., New Haven, engr.

▲ Fla., Miami Beach—SHOPPING CENTER—J. A. Cantor Assoc., Inc., 1411 Lincoln Rd., plans by Morris Lapidus, 528 Lincoln Rd., shopping center, L shaped (Sunny Shores), Collins Ave. and 180 St. $1,200,000.

▲ Ill., Evergreen Park—HOSPITAL—Evangelical Hospital, 5421 S. Morgan St., Chicago, plans by Schmidt Garden & Erikson, 104 S. Michigan Ave., Chicago, hospital, 93rd & 95th Sts. and Kostner & Kilbourn Ave., $12,000,000.

Ill., Lake Forest—COLLEGE HOUSING—Barat College of the Sacred Heart, 700 E. Westleigh St., college housing, $650,000.

Ill., Naperville—SCHOOL—St. Peter & Paul Church, 26 N. Ellsworth, plans by Meyer & Cook, 1915 N. Lincoln Ave., Chicago, 2 story, brick, stone Sunday School and gym, $450,000.

▲ Ill., Wheaton—MUSIC BLDG., etc.—Wheaton College, 501 E. Seminary St., plans by Warren S. Holmes Co., 2200 Mich., Natl. Tower, Lansing, Mich., gym, music bldg. auditorium, $2,250,000.

▲ Md., Lanham—SHOPPING CENTER—A. V. Williams, Box 145, Baltimore, Zone 20, Capital Gateway Plaza Regional Shopping Center, 65 acre site, Annapolis Rd. and Baltimore Parkway. $10,000,000. Red W. Tuemmler, Professional Bldg., Hyattsville, planning consultant.

▲ Mass., Brookline—SHOPPING CENTER—State Street Realty, Inc., 649 Wellesley St., Weston, plans by Irving W. Rutherford, 49 Garden St. Hartford, Conn., 300,000 sq ft. shopping center incl. 40 stores, Chestnut Hill, $8,000,000.

Mass., Stockbridge—PSYCHOPATHIC CENTER—Austen Riggs Center, Inc., Main St., plans by Prentice Bradley, 74 North St., Pittsfield, 2 story, 32,000 sq. ft., brick psychopathic center, Main St., addn. and alterations, $450,000. Construction for 1957.

Mass., Worcester—CHAPEL—Venerini Academy, 23 Edward St., plans by Anthony J. DePeace, 151 W. 46 St., New York 19, N. Y., chapel, auditorium, gymnasium. $344,000.

▲ Mich., Whitmore Lake—SCHOOL—State, A. N. Languis, dir., State Bldg. Dpt., Lewis Cass Bldg., Lansing, school for delinquent boys, 12 mi. north of Ann Arbor, on relocation US-23. $10,000,000. first unit, security bldg. $500,000.

Minn., Marshall—STORE—J. C. Penney Co., Inc., 2025 Nicollet Ave., Minneapolis, store, $350,000.

Minn., Minneapolis—CHURCH—Trinity Lutheran Church of Minnehaha Falls, Rev. E. J. Conrad, 415 E. 52 St., plans by Sovik, Mathre & Assocs., Northfield, church and parish house, $450,000.

Mo., Creve Coeur (St. Louis 24 P. O.)—CHURCH & SCHOOL—Temple Israel Congregation, 5001 Washington Blvd., St. Louis, Church and School, Spoede and Ladue Rds., $500,000.

Mo., St. Louis—OFFICE—Sinclair Coal Co., 114 W. 11 St., Kansas City, Mo., 2 story, basmt., 40,000 sq. ft. office bldg., northwest corner 3 and Olive Sts., $350,000.

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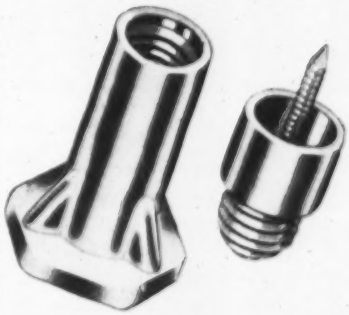

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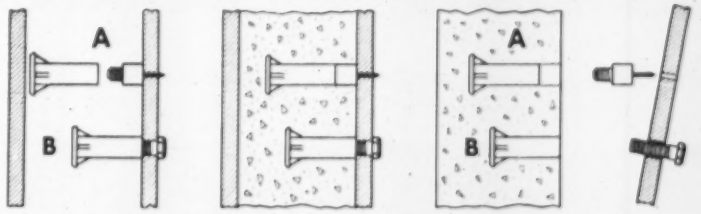

① A—Fasten Plug to wood form with nail. or B—Bolt concrete insert to steel form.

② PD Concrete Insert set in concrete — will not move if concrete is vibrated.

③ A—Strip wood form in conventional way. Remove Plug and re-use. or B—Remove bolt and strip steel form.

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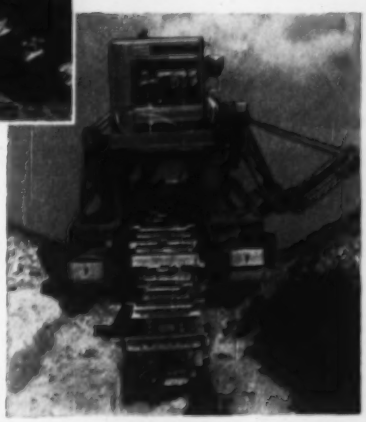

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N. J., Atlantic City—MOTEL—Seaside Hotel Corp., Pennsylvania Ave. & Boardwalk, plans by Donald Rosenstein; Guarantee Trust Bldg., motel and 150x164 ft. swimming pool, $343,000.

▲ N. J., Orange—HOSPITAL—St. Mary's Hospital, 135 Center St., plans by Fanning & Shaw, 49 Ward St., Paterson, 2 five story wings and nurses residence to hospital, $1,000,000.

N. Y., Brooklyn—RELIGIOUS BLDG.—R. C. Church of the Resurrection, 2525-85 Gerritsen Ave., plans by Beatty & Berlenbach, 52 Court St., Zone 2, 3 story religious bldg., $344,000.

▲ N. Y., Brooklyn—APARTMENT—Traco Concord, Inc., 460 Park Ave., New York, Zone 22, plans by Benjamin Braunstein, 163-18 Jamaica Ave., Jamaica, four 16-story, apartments, incl. 136 units, 230 Jay St., 175 and 215 Adams St., $4,950,000.

▲ N. Y., New York—OFFICE—100 Church Street Corp., 100 Church St., Zone 7, plans by Richard Roth, 575 Madison Ave., Zone 22, office alterations, $2,474,806.

▲ N. Y., New York—APARTMENT—180 East End Corp., c/o Philip Birnbaum; archt., 12 E. 48 St., Zone 17, 20 story apartment on west side of East End Ave. between 88 and 89 Sts., $2,000,000.

▲ N. Y., New York—OFFICE—Central Third Corp., c/o Carson & Lundin, archts., 50 Rockefeller Plaza, Zone 20, 27-story office on east side of Third Ave. from 45 to 46 Sts., $5,125,000.

▲ N. Y., New York—OFFICE—Corning Glass Works, 718 Fifth Ave., Zone 19, plans by Harrison & Abramowitz, 630 Fifth Ave., Zone 20, office southeast corner of Fifth Ave. and 56 St., $2,000,000.

N. Y., New York—RECREATION HALL—Missionary Sisters of the Sacred Heart, 701 Ft. Washington Ave., Zone 33, plans by DeSina & Pellegrino, 140 Cedar St., Zone 6, recreation hall, chapel, 343-399 Cabrini Blvd., $750,000.

▲ N. Y., New York—LABORATORY—Muscular Dystrophy Assoc., 1790 Broadway, plans by Skidmore, Owings & Merrill, 575 Madison Ave., Zone 22, 10 story laboratory research bldg., E. 72 St., $10,000,000. CD 9/28.

▲ N. Y., New York—OFFICE—Owner, c/o Sylvan & Robert Bien, archts., 33 W. 46 St., Zone 19, 34 story air-conditioned office, Fifth Ave. and 47 St., $6,500,000.

▲ N. Y., New York—OFFICE—Syndicate c/o Charles F. Noyes Co., 42 Broadway, Zone 14, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, and William Lescaze, 211 E. 48 St., Zone 17, 3 story office at 2 Broadway to replace present produce exchange bldg., $30,000,000. CD 5/18.

N. Y., Rego Park—STORE—Alexander's Dept. Store, Grand Concourse & Fordham Rd., plans by Ketchum, Gina & Sharpe, 227 E. 44 St., 2 story department store, west side of 63 Rd. near Queens Blvd., $500,000.

O., Cuyahoga Heights—OFFICE—Standard Oil Co. of Ohio, Midland Bldg., Cleveland, Zone 14, plans by Lester Kinnear, c/o owner, 2 story, 22,000 sq. ft. office, E. 49 St., $400,000.

O., Cleveland Heights—HOME—Montefiore Home, 3151 Mayfield Rd., Cleveland, Zone 18, plans by Weinberg & Teare, Citizens Bldg., Cleveland, Zone 14, and Geo. B. Mayer, The Arcade, Cleveland, Zone 14, 1 story home addn., existing facilities improv., $750,000.

O., Warrensville Heights—HOMES—Belfiore Constr. Co., 3615 Rawnsdale Rd., Cleveland, Zone 22, plans by Marvin Braun, 1311 Commonwealth St., Cleveland, Zone 24, 44 homes off Emery Rd., $968,000.

▲ Pa., Phila.—MEDICAL CENTER—Juniata Park Medical Center and Hospital, 1100-E. Lycoming Ave., medical center and hospital, $1,500,000.

▲ Pa., Warminster—CHURCH—R. C. Archdiocese of Phila., 310 N. 19 St., Phila., church and school on 25 acre tract, $2,000,000.

▲ Tex., Dallas—DWELLINGS—Centex Constr. Co., 4606 Greenville, 34 brick dwellings, $369,500; 30 brick dwellings, $375,000; 28 brick dwellings, $359,425; 32 brick dwellings, $366,200; 26 brick dwellings, $347,500, in area Oakland Hills, in Oak Cliff.

▲ Tex., Farmers Branch—DWELLINGS—Centex Constr. Co., 4606 Greenville, Dallas, 28 dwellings, $351,000; 36 dwellings, $381,500; 32 dwellings, $366,175; 35 dwellings, $377,000, in area Johnson Park Subdivision.

Tex., Garland—EDUCATIONAL—First Baptist Church Congregation, Garland, plans by Wright-Rich Assoc., 4350 N. Central Expressway, Dallas, masonry, structural steel educational bldg., $650,000.

Tex., Lamesa—HOSPITAL—Owners, c/o Butler & Kimmel, archts., 412 Ave. N., Lubbock, hospital, $700,000.

Tex., Odessa—SUPERMARKET—Bob Stroud, c/o Rob L. Peters, archt., 216 E. 8th St., supermarket, $350,000.

Tex., Richardson—SCHOOL—Roman Catholic Parish of St. Paul The Apostle, Floyd St., plans by Harper & Kemp, 710 Thomas Bldg., Dallas, masonry Parish Parochial School, $350,000. Gregerson & Gaynor, 2921 Fairmount St., Dallas, consult. engrs.

▲ Tex., San Antonio—DWELLINGS—H. B. Zachry Properties, Inc., 310 S. St. Marys St., 18 dwellings, $353,150; 25 dwellings, $375,500; 23 dwellings, $368,175; 20 dwellings, $361,000; 16 dwellings, $346,050, on Old WOW site off New Braunfels Ave.

Ont., Toronto—APARTMENTS—Owner, c/o Mendelow & Keywan, archts., 1348 Eglinton Ave., W., 6 story 50-suite brick and steel apartment bldg., with underground parking facilities, 77 to 81 Spencer Ave., $400,000.

Ont., Toronto—APARTMENT—Progress Construction Co., 107 Whitmore Ave., plans by Harry B. Kohl, 1407 Yonge St., 55 units, 5 story apartment bldg., Ivan Dr. west side near Main St., $500,000.

INDUSTRIAL BUILDINGS

▲ Calif., Los Angeles—WAREHOUSE, etc.—Catalina Inc., 443 S. San Pedro St., 160,000 sq. ft. warehouse and office, $1,600,000.

▲ Calif., San Francisco—WAREHOUSE—Eastman Kodak Co., 241 Battery St., plans by Kitchen & Hunt, 525 Market St., 2 story and partial 3 story 130,000 sq. ft. rein.-con. steel frame, distributing center, $2,500,000. H. J. Brunnier, Sharon Bldg., structural engr. Vandament & Darmsted, 156 2-St., mechanical and electrical engrs., all San Francisco. CD 7/26.

Conn., Manchester—WAREHOUSE—C. R. Burr & Co., Nurseries, 119 Oakland St., plans by Souheri & Manley, 884 Center St., 1 story 24,000 sq. ft. packaging warehouse with railroad siding N. Main St., $250,000.

Conn., New Haven—PLANT—Rockbestos Products Corp., 285 Nicoll St., new manufacturing plant for asbestos products, $350,000.

Conn., Windsor—WAREHOUSE—S.A.E. Steels, c/o Leo F. Capron, archt., 1221 Chapel St., New Haven, 1 story 12,000 sq. ft. steel frame, concrete block, warehouse, Route 5-A, $100,000.

Del., New Castle—PLANT—Chicago Bridge & Iron Co., 1305 W. 105th St., Chicago, Ill., steel fabrication plant, $500,000. CD 11/20/50.

Fla., Miami—BAKERY—Royal Baking Co., 601 N. W. Seventh St., plans by Christopher-P. Kantianis, 1537 Main St., Springfield, Mass., 1½ story 150x150 ft., rein.-con. bakery, $330,000.

Iowa, Muscatine—PLANT ADDN.—Grain Processing Corp., plant addition, $125,000.

▲ Kan., Wichita—WAREHOUSE—Etc.—Boeing Airplane Co., Personnel Bldg., plans by Wilson & Co., 705 E. Crawford St., Salina, 100,000 sq. ft. warehouse, $1,500,000; 3 story, concrete, steel 50,000 sq. ft. office, $2,000,000; modification and addns. to X-ray laboratory, $250,000; addnl. fuel and defueling area with fuel calibration, $400,000. Guy Shelley & Co., 254 Laura St., Wichita, consult. engrs.

▲ Md., Lime Kiln—PLANT—Alpha Portland Cement Co., Alpha Bldg., Easton, Pa., 2,000,000 bbls per year cement plant, $15,000,000.

Mass., Brighton—BOTTLING PLANT—Metropolitan Bottling Co. Inc., 3 West 57 St., New York, N. Y., plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., bottling plant, 130 Western Ave., Est. $100,000.

Mich., Sturgis—PLANT—Bound Brook Oil-Less Bearing Co., Bound Brook, N. J., 240x240 ft. mfg. plant, South Centerville Rd., $300,000.

Minn., Spring Valley—CREAMERY EXPANSION—Spring Valley Co-operative Creamery, J. M. Halverson, Sec.-Treas., 60x98 ft. creamery expansion, $240,000.

Neb., Falls City—MANUFACTURING BLDG.—Building Committee, Chamber of Commerce, Falls City, mfg. bldg., $200,000. Commodore Mobile Homes Corp. of Omaha, Lessee.

▲ N. Y., Greenburgh—LABORATORY—Union Carbide & Carbon Corp., 30 E. 42 St., New York, Zone 17, plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, Zone 22, research laboratory, service laboratory, utilities bldg., cafeteria, $2,000,000. CD 6/28, under Tarrytown, N. Y.

▲ N. Y., Syracuse—RESEARCH AND DEVELOPMENT CENTER—Borden Farm Products Div., Borden Co., 110 Hudson St., New York, Zone 13, research and development center, $1,000,000.

O., Athens—FACTORY—Royal McBee Corp., Athens, 60,000 sq. ft. factory, adjacent to present plant, $600,000.

Okla., Oklahoma City—SHOPS, etc.—Oklahoma Gas & Electric Co., 321 N. Harvey St., plans by Hudgins, Thompson & Ball, 1413-Classen St., shops, warehouse, supply rooms at S.E. 74 and High Sts., $500,000.

▲ Pa., Clearfield—RESEARCH DEVELOPMENT CENTER—Curtiss-Wright Corp., 633 Central Ave., Carlstadt, N. J., research and development center addn., $50,000,000.

Pa., East Butler—LABORATORY, etc.—Magnetics, Inc., Box 340, East Butler, plans by Howard & Murphy, Mellon Bank Bldg., Butler, 1- and 2 story, 120x240 ft., brick, block laboratory and mfg. bldg., $350,000.

Tex., Amarillo—WAREHOUSE—Amarillo Hardware Co., 600 Grant St., plans by Emmet F. & Jas. F. Rittenberry, Fisk M&P Bldg., warehouse, $350,000.

Tex., Bryan—HATCHERY—Kazmeier Sherill Hatchery, chicken hatchery 40,000 chicken bldg. capacity, $100,000.

Tex., Burleson—COTTON GIN—Porter Bros., reconstruct cotton gin, $100,000.

Tex., Dumas—TANK STORAGE FARM—Shamrock Oil & Gas Co., Amarillo, reconstruct burned out portion of steel tank storage farm, near here, $500,000.

▲ Tex., Ft. Worth—NUCLEAR RADIATION AFFECTS FACILITIES—Consolidated Vultee Aircraft Corp., Grants Lane, plans by Ralph H. Parsons Co., 617 S. Olive, Los Angeles, Calif., nuclear radiation affects facilities, Convair Plant, $4,750,000., CD 7/27.

Tex., Houston—PLANT—Fit-All Pricing Corp., 702-06 Ashland, production expansion program, $200,000.

▲ Tex., Houston—PLANT—Maxwell House Div. of General Foods Corp., 2906 Harrisburg, coffee roasting plant addn., $15,000,000.

Tex., Houston—PLANT—Sparks-Whithington Co., Jackson, Mich., remodeling and expansion of existing plant, $200,000.

Tex., Longview—PLANT—Cookie Corp. of the southwest, Cookie production plant, 2½ acres site, $175,000.

▲ Tex., Lufkin—PLANT—Southland Paper Mills, Inc., c/o E. L. Kurth, mgr., 4th newsprint plant production exten., $3,000,000.

▲ Tex., Port Arthur—PLATFORMING—Gulf Oil Corp., Pt. Arthur, "platforming" unit, $8,000,000.

Tex., San Antonio—Winerich Motor Sales Co., 301 Broadway, plans by Bartlett Cocke, 3501 Broadway, auto showrooms, display services bldg., $200,000.

Tex., Waxahachie—GRAIN STORAGE—Feedland, Inc., 6 bolted steel grain storage tanks, 60 ft. high, 24 ft. diam. to provide for 118,000 bu. grain, $100,000.

N. B., Lancaster—COLD STORAGE BLDG.—Owner, c/o Zurich Consultants Ltd., consult. engr., 8 Bedford Rd., Toronto, Ont., 50,000 sq. ft. cold storage, 25,000 sq. ft. service area, 5,000 sq. ft. office, $400,000.

N. S., Halifax—COLD STORAGE BLDG.—Owner, c/o Zurich Consultants Ltd., consult. engr., 8 Bedford Rd., Toronto, Ont., 50,000 sq. ft. cold storage, 25,000 sq. ft. service area, 5,000 sq. ft. office, $400,000.

▲ Ont., Kitchener—WAREHOUSE, etc.—B. F. Goodrich Canada Ltd., 251 King St. W., office and warehouse boundary line between Kitchener and Waterloo, on 12 acre site, $1,255,000. CD 8/2.

▲ Ont., Toronto—FACTORY—Pressure Pipe Co. of Canada Ltd. Sun Life Bldg., Montreal, Que., 100,000 sq. ft. factory to manufacture rein. water transmission pipe 20 acre site on Plant St. near Highway 27 in Etobicoke suburban, $2,000,000.

Que., Sept Iles—PLANT—Canadian Industries Ltd., 1253 McGill College Ave., Montreal, explosives plant on 3400-acre site, between town and Moisie River, $500,000. H. W. Humphrey, c/o owner, ch. engr.

▲ Que., Thetford Mines—PLANT—Mogul Mining Corp. Ltd., 25 Adelaide St. W., Toronto, mine concentrator, Harvey Hill, Leeds Twps., $1,000,000. Kilborn Eng. (1954) Ltd., 36 Park Lawn Rd., Toronto, Ont., consult. engrs.

Que., Valcourt—PLANT ADDN.—L'Auto Neige Bombardier Ltd., 2 story, 150x180 ft. plant addn. to factory, $200,000.

UNCLASSIFIED

Conn., Clinton—YATCHING CENTER, etc.—Clinton Marina, Inc., yachting center, Clinton Harbor, incl. sales & service bldg., fuel sales & service dock, piers & berths, boat repair shop, restaurant, motel, wading pool, $300,000.

Conn., New London—FERRY TERMINAL, etc.—Fisher's Island Ferry Dist., John St., ferry terminal, 125 sq. ft. warehouse and office bldg., wood piles, $210,000.

▲ Mo., St. Louis—PARKS AND RECREATIONAL—City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, plans by Stuart M. Mertz & Layton, Layton & Rodes, landscape archts., Shell Bldg., 1221 Locust St., Zone 3, parks and recreational areas in city, $1,830,000. CD 6/27/55.

Mo., University City (St. Louis 5 P.O.)—RECREATIONAL PAVILION—City, Elder Gunter, city mgr., City Hall, 6801 Delmar Blvd., plans by Shapiro & Tisdale, 705 Chestnut St., St. Louis, Zone 1, 1 story 55x100 ft. brick, masonry blocks, steel recreational pavilion, Heman Park, $106,000. CD 3/5/51.

O., Sandusky—SWIMMING POOL—Perkins Local School Dist., Sandusky, bond election Nov. 6, swimming pool on school grounds, $110,000.

O., South Euclid—SWIMMING POOL—City, City Hall, swimming pool, $100,000. Tryon Hoff & Assoc., 1922 E. 107 St., Cleveland, consult. engrs. CD 7/11.

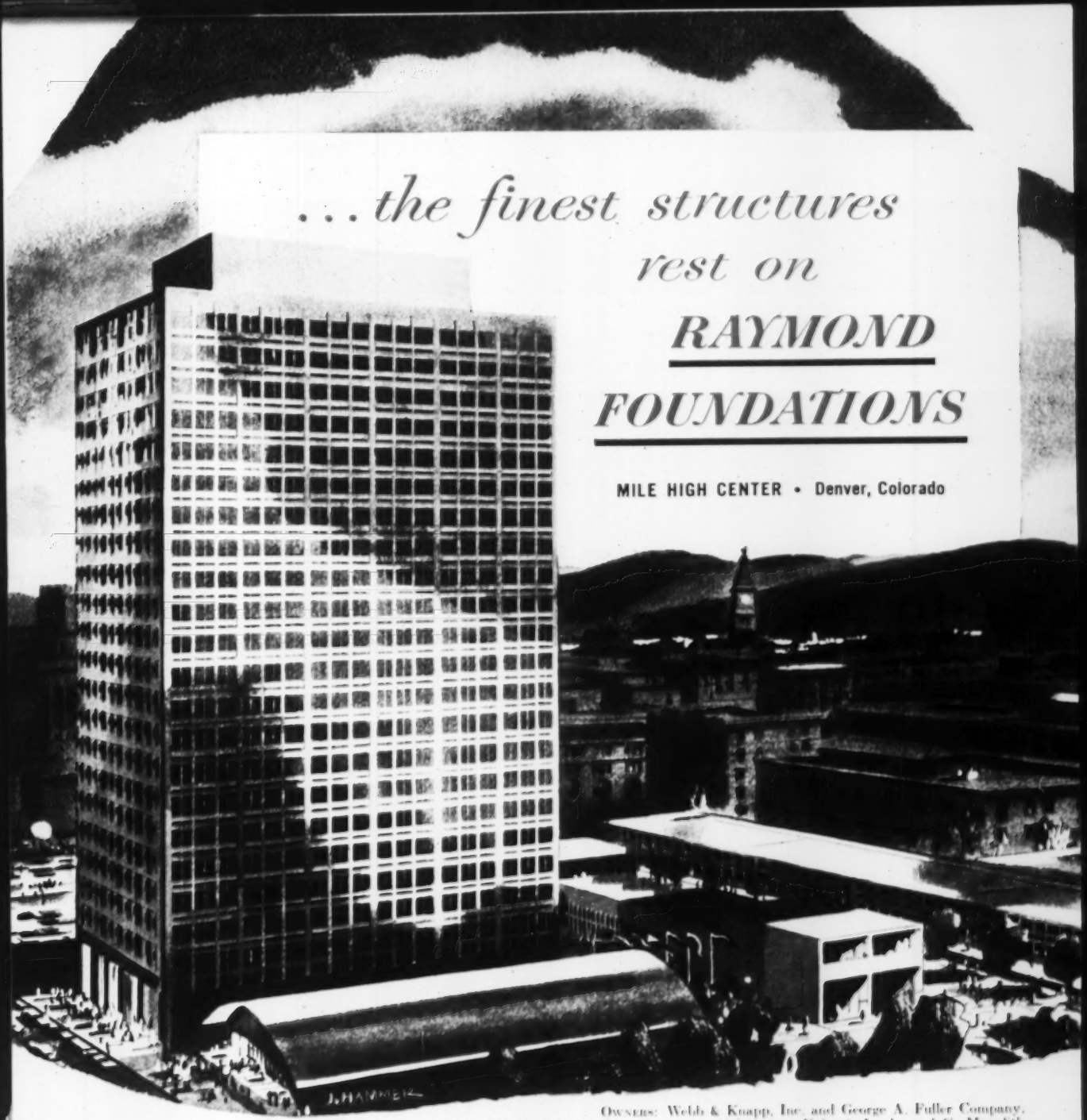
Oklahoma—GAS LINES—Cities Service Gas Co., First National Bank Bldg., Oklahoma City, 12 mi. 30 in. and 17 mi. 20 in. gas lines, between Oklahoma City and Mulhall, Oklahoma Co., $425,000. CD 5/14/53.

Tex., Austin—LIGHTING—Northway Crest Development, Inc., c/o S. Rebb Ruff, plans by Fehr & Granger, 502 E. 5th St., area lighting, $75,000; natural gas lines, $75,000, between N. Lamar and Guadalupe Sts. for shopping center zone.

▲ Tex., Corpus Christi—DRY DOCK, etc.—Nueces County Navigation Comm., Corpus Christi, dry dock, $1,500,000; docks railway trackages and facilities, $100,000.

Tex., Seminole—COUNTY PARK—Gaines Co., Chas. E. Lawrence, Judge, bond election Aug. 10, for county park, including golf course, wading pools, $250,000.

Utah, Salt Lake City—PARKING RAMP—Zion Security Corp., Pierce Brady, mgr., U.P. Annex Bldg., plans by Deseret Architects and Engineers, Ness Bldg., 4th level 120x165 ft. parking ramp, 21 to 37 Temple St., $200,000. CD 1/30.



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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BUILDINGS—LB & CA

▲ **C. Profenno Co.**, 127 Marginal Way, Portland, Me. LB $1,984,000. TREATMENT bldg.; tuberculosis bldg., State Hospital, AUGUSTA, ME. State, Dpt. Institutional Service, State House, Augusta, Me. Bids Aug. 15. CD 7/6.

▲ **B. Perini & Sons, Inc.**, 75 Montvait Ave., Framingham, Mass., CA $2,114,000 est. $2,200,000. HOSPITAL, RUTLAND, VT. Rutland Hospital, Nichols St., Rutland, Vt. Bids July 24. CD 7/27 under LB.

▲ **Granger Contg. Co., Inc.**, 306 Main St., Worcester, Mass. CA $1,798,300 est. $1,800,000. Naragansett Regional Junior-Senior High SCHOOL, Templeton, BALDWINVILLE, MASS. Towns Templeton and Baldwinville, Baldwinville, Mass. CD 7/20, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **New York**—BA 9/6—Power Authority of the State of New York, 270 Broadway, New York, relocation of N. Y. State Hy. Rte. 37 between Waddington and Coles Creek, St. Lawrence Co., Spec. No. PA-5-11021, St. Lawrence Contr. No. 29. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18/54.

BUILDINGS—BA

▲ **Del., Wilmington**—HOSPITAL EXPANSION—BA 8/30—Whiteside, Moeckel & Carbonell, archts., 909 Tatnall St., hospital expansion, Wilmington General Hospital, Broom & Linden Sts. $3,800,000. Extended date. CD 8/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Great Lakes Dredge & Dock Co.**, 17 Battery Place, New York 4, N. Y. CA $1,723,261. dredging and rock removal to depth of 37 ft. below mean low water involving removal of approx. 127,900 cu. yd. place measurement of ledge rock and 25,900 cu. yd. place measurement of material other than ledge rock from New York and New Jersey channels, Sect. 4 Rock area 7, Union Co., N. J., and Richmond Co., N. Y., CIVENG-30-075-56-78, NEW YORK AND NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids July 12. CD 6/29.

▲ **Rao Electrical Equipment Co., Inc., Arc Electrical Constr. Co., Inc., and Tully & DiNapoli, Inc.**, 314 E. 39 St., New York 16, N. Y. (joint ventures). CA $2,448,706. Contr. P-181, furnishing and installing 69 KV underground transmission system from 75 Street Substation to 59 Street Substation, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. CD 7/19, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton.

N. J.—The Conduit & Foundation Corp., 158 N. 20 St., Phila., Pa. LB $3,158,218. (7 bidders) Cont. 2, superstructure, Manahawkin Bay Bridge, Rte. S 0 (1927) Rte. 72 (1953) Sect. 5f, Stafford Twp. Fed. Proj. F-130 (6). Ocean Co. Bids Aug. 14. CD 8/2.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.

N. J.—Reid Contrg. Co., Inc., 23 Main St., Woodbridge, N. J. CA $3,897,629. dual roadway bridges, Rte. 37, Sect. 16 from Mathis Bridge to Seaside Heights, Fed. Projs. F-120 (3) and U-200 (1), Ocean Co.;

N. J.—Franklin Contg. Co., 12 Central Ave., Newark, N. J. CA $530,475. intersection revision Rte. 3 at US Rte. 46 and Valley Rd., Little Falls Twp. and City of Clifton, Fed. Proj. U-130 (11) and U-186 (13) Passaic Co. Bids July 24. CD 7/27, under LB.

BUILDINGS—LB & CA

▲ **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., cancelled bids to have been opened about July 31, construct and finance housing (Capehart), $1,000,000-$3,000,000, FORT WADSWORTH, N. Y. CD 6/18.

▲ **Overlook Park Homes**, c/o Arthur Williamson & Co., 484 Route 17, Paramus, N. J. Owner Builds. $2,660,000. 95 HOUSES; 58-acre tract adjoining Hackensack Golf Club. EMERSON, N. J.

▲ **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., cancelled bids to have been opened about August 14 indefinitely, construct and finance, housing proj. Est. $1,000,000-$3,000,000. FORT MONMOUTH, N. J. CD 5/23.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond.

George M. Brewster & Son, Inc., 275 Fort Lee Rd., Bogota, N. J., LB $2,977,820 (5 bidders) Cont. B-1A, Hampton approach highway and structures, (Hampton Roads Proj.) City of Hampton. Bids Aug. 8. CD 7/27.

▲† **J. L. Coe Constr. Co.**, Builders Bldg., Charlotte, N. C., LB $1,665,526, hangar, Maine Corps Air Station, NOy 91320. Spec. 48260. CHERRY POINT, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids July 17. CD 6/19.

BUILDINGS—LB & CA

▲ **Calvin-Kovens Constr. Co.**, 1657 West Ave., Miami Beach, Fla., CA Approx. $1,000,000. Cadillac HOTEL ADDN. 3925 Collins Ave., Miami Beach, Fla. Cadillac Hotel Corp., 3925 Collins Ave., Miami Beach, Fla.

▲ **U. S. Eng.**, 830 W. Broadway, Louisville, Ky., cancelled bids to have been opened Aug. 7, 2,042 housing units, (Capehart), Eng. 15-029-56-87, FORT KNOX, KY. CD 7/27.

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

▲ **American Bridge Div., U. S. Steel Corp.**, 208 S. LaSalle St., Chicago, Ill., CA $3,000,555, Sect. 38-2, Calumet Skyway Toll Bridge, furnishing, erecting steel for exits and entrance ramp at Stony Island Ave., 77th St., and East End Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. DeLeuw, Cather & Co., 150 N. LaSalle St., Chicago, engrs.

Kenny Constr. Co., 3220 Oakton St., Skokie, Ill. CA $2,251,762, constr. and paving 6½ mi. banked road between Colfax and Commercial Aves. Calumet Skyway Toll Bridge (Chicago, Ill.)

▲ **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, Ill. CA $1,293,000, Div. "A", filter plant impvts., structures and piping, WILMETTE, ILL. Grand total $1,797,027. Village, Village Hall, Wilmette, Ill. Bids July 24. CD 8/1 under LB.

Pitt Const., 1235 Washington Blvd., Pittsburgh, Pa., CA $234,700, Div. "C", filter equip. (Wilmette, Ill.).

Allis-Chalmers Mfg. Co., 864 S. 70 St., Milwaukee, 1, Wis., CA $45,808, Div. "D", pumping equip. (Wilmette, Ill.)

Rossetti Contrg. Co., Wilmette, Ill., CA $223,519, Div. "E", 24-in. water main (Wilmette, Ill.).

BUILDINGS—LB & CA

▲ **Harry J. Forepaugh Sons, Inc.**, 1727 E. 31 St., Bedford, O., LB $1,994,998, (4 bidders) general constr. HIGH SCHOOL addn., BEDFORD, O. Bd. Educ., 91 Tarbell St., Bedford, O. Bids Aug. 8. CD 7/2.

J. J. McHale Co., 2154 E. 22 St., Cleveland, O., LB $363,933, plumbing for high school addn. (Bedford, O.).

R. & M. Heating and Air Conditioning, 3858 Superior Dr., Cleveland, O., LB $385,780, heating and ventilating for high school addn. (Bedford, O.)

▲ **Ireland & Co.**, Traction Bldg., Cincinnati, O., Own Forces. $1,564,800. 96 prefabricated HOMES, on new street off Limerick Ave., CINCINNATI, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, engrs. Awarded Aug. 13.

▲ **Westinghouse Electric Co.**, 401 Liberty Ave., Pittsburgh, Pa., LB $1,071,118 (4 bidders) Contrs. C and F, Miny. LIGHT EXPANS., CLEVELAND, O. City, Div. Light & Power, V. M. DeMelto, Comm., City Hall, Cleveland 14, O. Vincent DeMelto, c/o owner, engr. CD 1/27/54.

▲ **Campbell, Lowrie, Lautermilch**, 400 W. Madison St., Chicago, Ill., CA $1,000,000. 1 story, 100,000 sq. ft., brick, steel FACTORY, CARPENTERSVILLE, ILL. Hills-McCanna Co., 3025 N. Western Ave., Chicago, Ill. Olsen, Urbain & Sandstrom, S. S. Wabash Ave., Chicago, archts. CD 2/17.

▲ **J. P. Cullen & Son**, 330 E. Eastern Ave., Janesville, Wis., CA $2,144,196, general constr., STATE OFFICE ADDN., Unit No. 3, MADISON, WIS. Wisconsin State P. Bldg. Corp., State Office Bldg., Madison, Wis. Bids July 11. CD 7/25, under LB.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Tex., Houston**—GEOLOGY, BIOLOGY—BA 9/7—Rice Institute, S. Main St., geology bldg., $1,000,000; biology bldg., $1,000,000. Extended date. George & Able B. Pierce, 2200 Welch St., archts. H. E. Bovay, Jr., N. Esperson Bldg. and Walter P. Moore, 2 Pinedale St., engrs. CD 8/8.

▲ **Minn., Golden Valley (P. O. Minneapolis)**—WAREHOUSE—BA On Or About 9/17—Minneapolis-Honeywell Regulator Co., 2743 Fourth Ave. S., Minneapolis, 263,000 sq. ft. central warehouse and mfg. plant west of Douglas Dr. and north of Minneapolis, Northfield & Southern R. R. tracks. $2,000,000. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 4/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Texas Bitulithic Co.**, P. O. Box 10365, Dallas 7, Tex., CA $1,477,107. est. $1,585,800. runway extension and access road, Carswell Air Force Base, ENG 41-443-56-87. FORT WORTH, TEX. U. S. Eng., P. O. Box 1600, Fort Worth, Tex. Bids July 31, awarded Aug. 10. CD 8/9, under LB.

▲† **J. W. Bateson Co. Inc.**, 400 Gibson Life Bldg., Dallas, Tex., CA $2,483,893. service and supply area WAREHOUSE, IEO facilities, etc. (IFB) 05-613-21, Air Force Academy, COLORADO SPRINGS, COLO. Dpt. Air Force, U. S. Air Force Academy Constr. Agency, P. O. Box 1670, Colorado Springs, Colo. Bids July 31, awarded Aug. 6. CD 8/6, under LB.

BUILDINGS—LB & CA

▲ **A. H. Neumann & Bros. Inc.**, 514 Hubbell Bldg., Des Moines, Iowa, CA $780,800. DORMITORY No. 4 addn., DES MOINES, IOWA. Drake University, 25 and University Sts., Des Moines, Iowa. Bids July 24. CD 7/13.

Langer & Assocs., 225 Jewett Bldg., Des Moines, Iowa, CA $374,480. Jewett Union bldg. addn., (Des Moines, Iowa).

▲ **D. C. Bass & Sons**, Bass Bldg., Enid, Okla. CA $1,070,546. general constr., high SCHOOL, JUNCTION CITY, KAN. Bd. Educ., Junction City, Kan. CD 8/8, under LB.

▲ **H. Sam Clark**, 6230 Glenwood St., Mission, Kan. Owner Builds. Est. $1,000,000. 90 RESIDENCES adjacent to Kansas Hy. 7 and Elm St., OLATHE, KAN.

▲ **Purvis & York**, 2312 Lucas Dr., Fort Worth, Tex. Own Forces. $383,335, 41 DWELLINGS; $373,379, 39 dwellings; $357,775, 36 dwellings, FORT WORTH, TEX. Grand total $1,114,489. CD 7/12.

▲ **MacDonald Engrg. Co.**, 22 W. Madison St., Chicago, Ill., CA Est. $1,750,000. coffee PLANT expans., HOUSTON, TEX. Maxwell House Div. of General Foods Corp., 3906 Harrisburg St., Houston, Tex. CD 8/7.

▲ **H. B. Zachry Constr. Div.**, Box 10188, San Antonio, Tex., CA $1,698,000, erection only of Mission Road GENERATING PLANT UNIT No. 3, SAN ANTONIO, TEX. City P. Service Bd., Navarro and Villita Sts., San Antonio, Tex. CD 12/15/55.

▲ **Robert E. McKee General Contractor, Inc.**, Box 1706, Santa Fe, N. M. LB $1,732,700. group 18, HOUSING Phase "B" 100 dwelling units, bids 291-56-13, LOS ALAMOS, N. M. Atomic Energy Comn., Los Alamos Area Office, Los Alamos, N. M. Bids Aug. 7. CD 7/24.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲† **Barry J. Richards Co.**, P. O. Box 1187, Studio City, Calif., LB $1,576,485. est. $1,528,241 (5 bidders) 45 two bedroom and 45 three-bedroom wood frame RESIDENCES; 146 carports; conference and administration bldgs., streets, utilities, etc. for Trinity River Proj. workers at Lewiston, Central Valley Proj.; Spec 4722. CALIFORNIA Bureau Reclamation, Dpt. Interior, Weaverville, Calif. Bids Aug. 14. CD 7/5.

▲† **P. J. Walker Co.**, 3900 Whiteside Ave., Los Angeles, Calif., CA $1,204,486. technical services and communication bldg., Edwards Air Force Base. ENG-04-353-56-125, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 3, awarded Aug. 7. CD 8/8, under LB.

BUILDINGS—LB & CA

▲ **Dahlgren Constr. Co.**, 1700 21 Ave. S., Seattle, Wash. CA $1,409,833, general contr., 156,000 sq. ft. steel frame HIGH SCHOOL, EDMONDS, WASH. School Dist. 15, Edmonds, Wash. Bids July 3. CD 7/11, under LB.

▲ **The Ramo-Woodbridge Corp.**, 8820 Bellanca St., Los Angeles, Calif. Owner Builds. $1,358,500. OFFICE bldg., 5500 W. El Segundo Blvd., HAWTHORNE, CALIF. A. C. Martin, 333 S. Beaudry St., Los Angeles, archt.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Poole Constr. Co. Ltd., 10503 109th St., Edmonton, Alta. CA $1,485,805. grading, culverts, base course, bit. prime coat Mile 10 to Mile 16, Trans Canada Hy., Yoho National Park, Field. Awarded Aug. 6. CD 7/17, under LB.

▲ **Morrison-Knudsen Co. of Canada, Ltd.**, 580 Hornby St., Vancouver, B. C. CA, Grand total $27,000,000. 155 mi. of gas gathering pipe line part of 650 mi. pipe line from Fort St. John B. C. and Peace River area to San Juan Basins, N. M. BRITISH COLUMBIA-NEW MEXICO.

Westcoast Transmission Co. Ltd., Pacific Northwest Pipe Line Corp., Pacific Gas & Electric and El Paso Natural Gas Co., 326 9th Ave. W., Calgary, Alta. Canadian-Bechtel Ltd., 326 9th Ave. W., Calgary, Alta. Awarded Aug. 9. CD 10/23/52, under Alberta and British Columbia.

Macwell-Stearns Rogers Co., 1500 W. Georgia St., Vancouver, B. C., compressor stations at Taylor Flats, Alta., Fort McLeod and South of Quesnel, B. C. (British Columbia-New Mexico).

BUILDINGS—LB & CA

▲ **Pigott Constr. Co. Ltd.**, Pigott Bldg., Hamilton, Ont. CA $3,148,800. COURT HOUSE, REGISTRY OFFICE, HAMILTON, ONT. Joint Court House Committee, County of Wentworth and City of Hamilton, National Revenue Bldg., Hamilton, Ont. Bids July 26. CD 8/14, under LB.

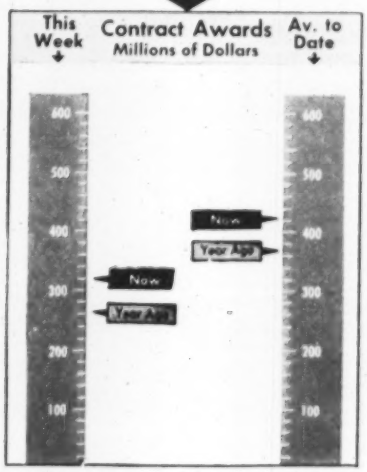
AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Parsons & Whittemore-Lyddon Organization, Inc.**, 250 Park Ave., New York, N. Y. U. S. A. CA Est. $11,500,000. PULP MILL, near Muret, FRANCE. La Cellulose d'Aquitaine S. A., Muret, France.

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 34 wks 1956	Chge %
	$ millions		
Federal	$20.4	$1,161.0	−0.4
State and Municipal	149.4	4,273.7	+22
Total Public	169.8	5,434.7	+16
Total Private	151.7	8,975.9	+17
U. S. Total	$321.5	$14,410.6	+17
By Type of Work			
Waterworks	$6.6	$238.3	+31
Sewerage	14.6	395.0	+56
Bridges	19.8	403.3	+30
Highways	62.8	1,603.7	+12
Earthwork, Waterways	6.3	503.0	+19
Buildings:			
Public, Excl. Hous-g.	40.1	1,329.3	+14
Public Housing	1.0	218.0	+19
Private Housing	73.9	3,707.1	−11
Commercial	19.2	1,195.5	+6
Industrial	38.9	3,632.8	+98
Unclassified	38.3	1,184.6	−12
U. S. Total	$321.5	$14,410.6	+17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

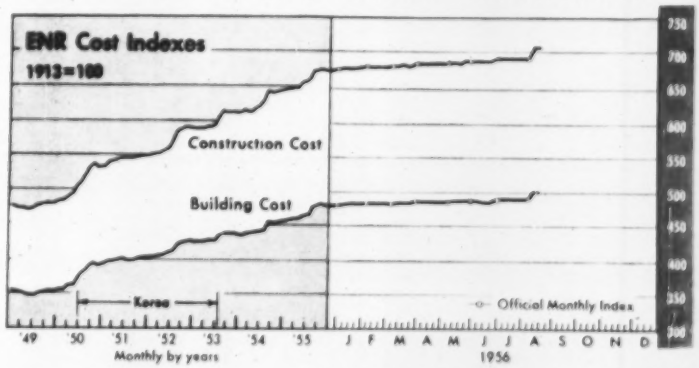
	Week of Aug. 16	Cum. 33 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$95.7	$3,028.4	+39
State and Municipal:			
All Except Housing	34.1	3,008.9	+10
Housing	....	42.3	−41
Federal Loans	....	122.9	+39
Federal Aid	....	1,070.0	+25
Total Nonfederal	$129.8	$7,272.5	+23
Federal Appropriation:			
In U. S.	$(10.1)*	$3,460.3	+2
Outside U. S.	....	15.9	−81
Total New Capital	$119.8	$10,748.7	+15

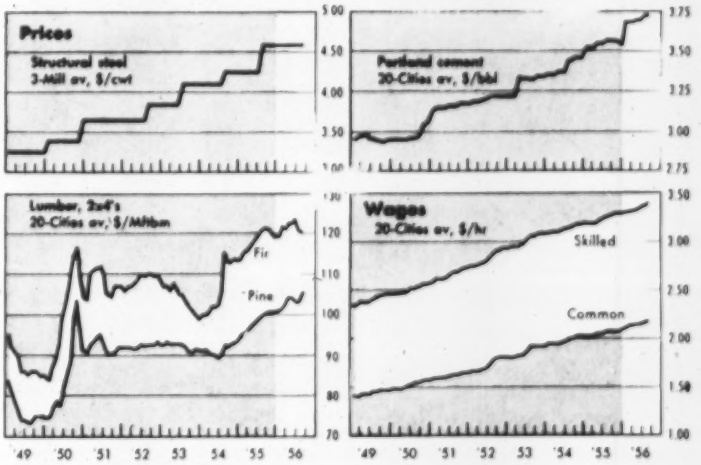
* Revision of fiscal '57 appropriation reported for week of August 9th.

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Aug. 16 1956	% Change from July 19 1956	Aug. 18 1955
Construction Cost	705.84	+1.3	+4.9
Building Cost	500.96	+2.0	+4.7

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.845
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518





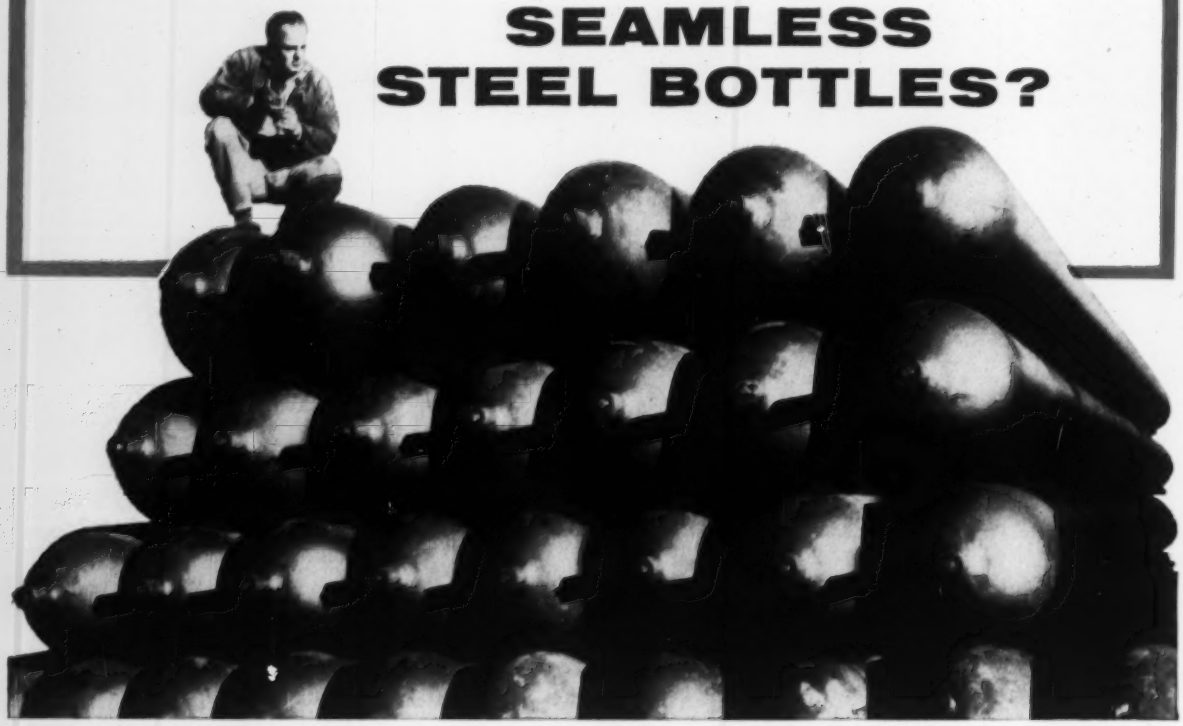
ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Aug. 1956	Construction Cost % Change in Month	Construction Cost % Change in Year	Building Cost Aug. 1956	Building Cost % Change in Month	Building Cost % Change in Year
Atlanta	512	+2.0	+3.9	451	+1.6	+3.4
Baltimore	595	0	+0.2	491	0	+4.4
Birmingham	549	0	+5.8	448	0	+3.8
Boston	741	−0.3	+4.5	503	+0.2	+3.3
Chicago	784	−0.3	+4.4	500	−0.4	+2.6
Cincinnati	707	0	+5.2	483	+0.8	+3.5
Cleveland	819	0	+4.3	508	0	+3.9
Dallas	524	0	+3.5	434	+0.7	+3.6
Denver	670	0	+2.2	493	+0.5	+1.6
Detroit	800	0	+3.0	518	0	+3.1
Kansas City	742	0	+2.4	499	0	+2.3
Los Angeles	729	−0.1	+3.4	487	−0.2	+1.5
Minneapolis	747	0	+3.8	516	0	+2.8
New Orleans	560	0	+2.6	455	+0.5	+1.1
New York	838	0	+5.6	565	0	+3.0
Philadelphia	737	0	+2.2	538	0	+1.0
Pittsburgh	717	+4.7	+3.9	519	+3.9	+4.2
St. Louis	753	−0.1	+3.0	520	−0.2	+2.7
San Francisco	746	−0.3	+4.1	472	+0.5	+2.0
Seattle	716	0	+3.3	444	+0.8	+1.8
U. S.—20 Cities' avg.	696	+0.2	+3.6	491	+0.4	+2.8
Montreal	560	0	+4.2	437	0	+4.6
Toronto	589	−1.4	+7.9	462	−1.0	+4.4

* Indexes are as of August 2, so they do not include August 7 steel price increase which adds 10 points to the 20-Cities index.

What's so good about underground gas storage in

SEAMLESS STEEL BOTTLES?



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UNDERGROUND GAS STORAGE IS ECONOMICAL

Seamless Steel Bottles call for virtually no maintenance. Unlike aboveground installations, these bottles do not require periodical painting, nor do they need constant inspection against the elements. Moreover, any group of bottles can be taken off the line for inspection or repair at any time without interrupting the gas pressure of the other groups of bottles.

UNDERGROUND GAS STORAGE IS SAFE

Buried underground, National Seamless Steel Bottles are safe from harm. They are effectively protected from storms, high winds and lightning. And there is no hazard to or from aviation.

NATIONAL SEAMLESS STEEL BOTTLES ARE DEPENDABLE

The process of manufacturing National Seamless Steel Bottles assures the utmost in safety, performance and long-time, dependable service. The bottles are pierced from solid billets of high quality steel, leaving little room for doubt where wall strength is concerned. And before being shipped, every bottle is subjected to a high pressure hydrostatic test at the mill.

For more complete details about this modern, economical system of gas storage, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

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National Seamless Steel Bottles

UNITED STATES STEEL

THE LONGER LOOK:

Huge Demand for Money Makes Credit Tight

Higher interest rate fails to slow borrowing; Spurt in corporate securities takes spotlight

Tight money in the last few months has plagued not only homebuilders but almost every business that needs credit for itself or its customers. Many borrowers have not known money to be so tight in almost 25 years. And despite several false starts, there seems to be little prospect of much easing in the near future.

For construction, a continued shortage of money threatens to hold down fall housing starts and result in cancellation or postponement of other building projects.

High interest rates are putting a crimp in financing efforts of states, municipalities and utilities.

In the mortgage market, money is just plain scarce.

Behind the present tightness of money is the huge demand for credit since early last year.

Several important parts of the economy, indeed, have been on a borrowing binge:

- Total mortgage debt outstanding soared from $113.6 billion at the end of 1954 to $130 billion by the end of 1955, up $16.4 billion.
- Corporate securities outstanding rose a net of $7.2 billion.
- Commercial and industrial loans by commercial banks went up $6.4 billion.
- Consumer credit, mostly because of on-the-cuff buying of autos, shot up $6 billion, to an all-time record $36 billion outstanding.

All this borrowing means, of course, that somebody has to be ready to lend money. And the result is heavy pressure on the resources of lenders—both for long-term money (bonds and mortgages) and short-term money (such as bank credit).

In response to the law of supply and demand, the price of money—interest rates—went up.

Also, government agencies have been concerned about the inflationary threat of all this increased spending power. Housing agencies clamped down on mortgage terms last summer, and the Federal Reserve System has raised the discount rate five times—from 1½% to the present rate of 2½%. (This is the important rate at which banks themselves borrow money.)

Borrowing has continued at a high rate this year. Lower auto sales and the fact that last year's borrowers are making big repayments have held down the net rise in consumer credit. Federal Reserve stringency has kept the rise in commercial loans under $3 billion. And mortgage debt has risen at a slower rate. But corporate securities outstanding have moved up even faster than their 1955 pace, and state and municipal issues are running 10% ahead of last year.

Meantime, despite the attraction of higher interest rates, the volume of savings available to lending institutions has risen less than it did in early 1955. Mutual savings banks, savings and loan associations and life insurance companies report smaller gains in deposits and assets for the first six months of 1956 than in the same months of 1955.

The result is still higher interest rates, with bank loans and bond issues commanding the highest rates since the early 1930s. In recent weeks, several major issues for public construction and corporation financing have been withdrawn or priced down because of poor market reception, even at rates that would have seemed extravagant 18 months ago.

What makes the current tightness in the money market so hard on some sectors of construction is their inability to compete with other borrowers for scarce credit. They are even having trouble holding on to some of their traditional credit sources, because today's credit situation has scrambled the various money sources together in a huge Spanish omelet.

Legal requirements insure that most of the resources of savings and loan associations and mutual savings banks will go into mortgages, but high yields on government securities are making their purchase attractive. Life insurance companies and commercial banks, which have also been big providers of mortgage money, are being tempted by high returns on corporate securities and loans.

A special handicap on mortgages is the fact that government-pegged rates—attractive enough to lenders ordinarily—have not been able to move up and compete for money when other rates have risen.

State and municipal securities, even with tax advantages, are getting stiff competition in the bond market. Limited either by law or by available revenue, many units cannot pay the rates the market demands. And sluggish procedural requirements prevent them from moving quickly into the market when it eases temporarily.

Corporate securities, now running 39% ahead of last year's pace, stand a better chance of providing construction money, though even in this sector many companies are flinching at the price.

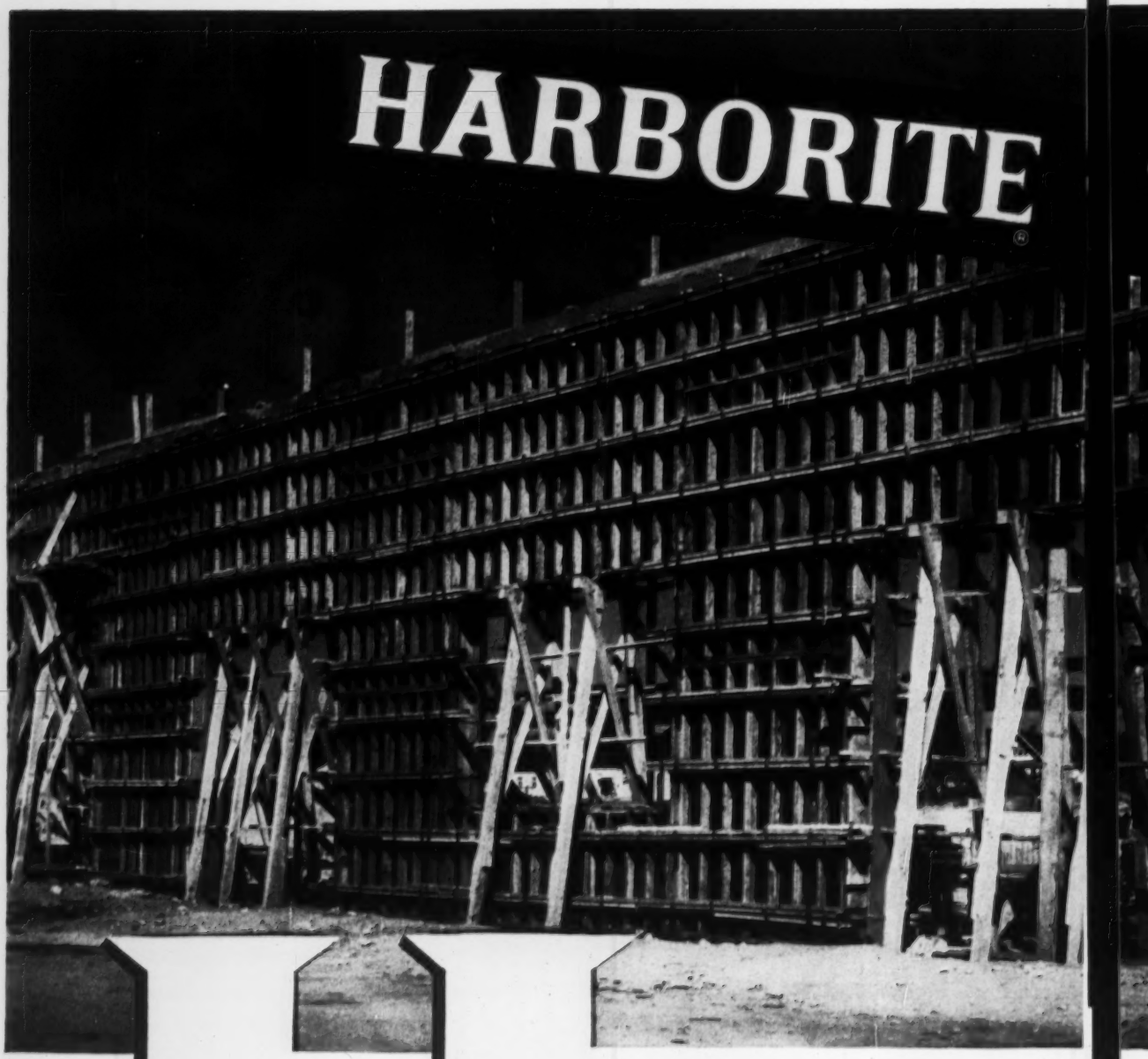
Heavy demand for money to finance industrial expansion has put pressure also on short-term money. With insufficient money coming from bonds and other long-term sources, bank loans are being used.

This, coming on top of higher working-capital requirements to finance inventory-building, is a principal reason for tightness in bank lending since early spring.

High short-term rates, now pushing against traditionally higher long-term rates, and the limited amount of bank credit available are making it tough even for builders to obtain loans from regular bank sources.

All this close interaction between the different components of the money market and the probability that heavy credit demands will continue—for industrial expansion, for rebuilding strike-depleted inventories, for increasing working capital needed to pay higher wage bills, for financing consumer purchases of 1957 autos—make it difficult to see any early easing of money. Government agencies, furthermore, will be reluctant to help loosen credit until the economy shows signs of slowing down or, at least, of fighting off the currents threats of inflation.

(B&F continued on page 109)



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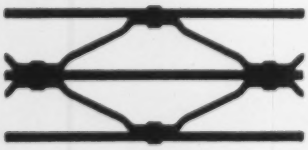

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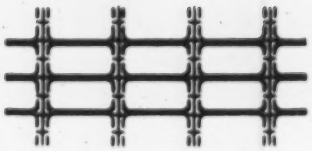

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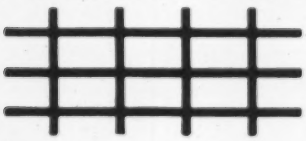

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Big Contractors Are Growing Fastest

More contractors crossed the $100,000 mark in new business last year. They number 7,986, for a gain of 2% over 1954. But 11% more (2,518) crossed the $1 million mark.

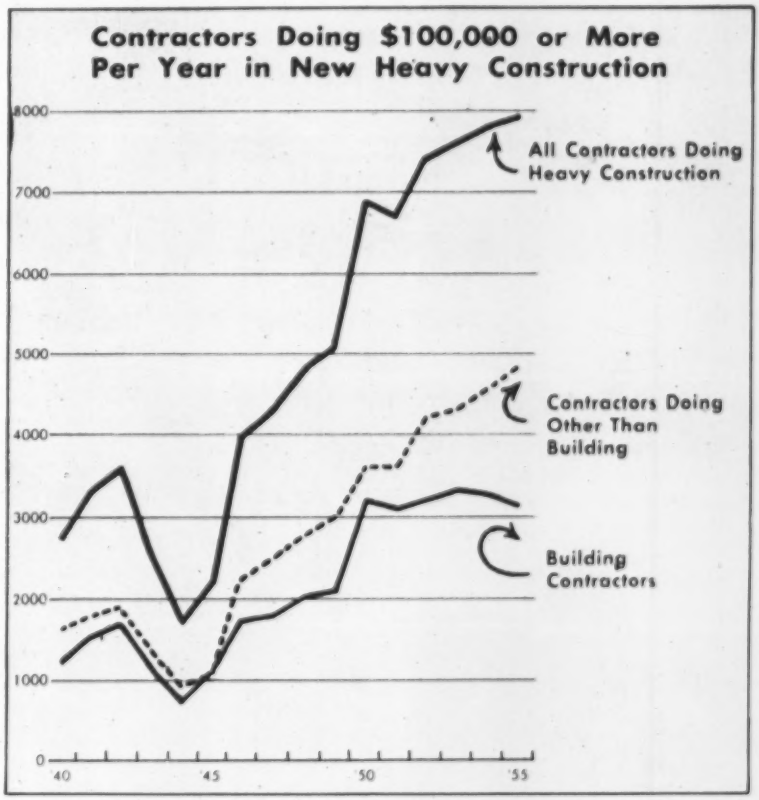
The total of firms who have taken on $100,000 in new business is up 19% in the past five years and is up 100% for the past ten. But the "million-dollar" contractors have increased 32% in five years, 82% in the past ten.

These vital construction statistics, from the contracts reported in ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY, show also that the number of projects increased 9% last year over 1954 for the million-dollar firms, while their dollar volume of new work went up 26%, to $9.8 billion.

This strong trend to bigger companies is shown in detail in the accompanying tables. But tough competitive situations show up, too. For example, the million-dollar highway contractors increased 21% last year, but the number of projects on which they worked went up only 7% and their dollar volume was up only 19%.

• Others get less—While there were more million-dollar contractors in every type of construction except sewerage, there were fewer medium-size firms ($500,000 to $1 million in total contracts) in most categories.

There were exceptions to this. The number of contractors in the middle group picked up in the sewerage and airport fields (up 18%) and in roadwork, up 5%.



ENR counted 1,555 medium-size contractors last year, 2% more than in 1954.

This group handled 4% fewer projects than in the previous year and the dollar volume was down fractionally from 1954.

• Fewer smaller firms—Contractors in the smaller business group ($100,000 to $500,000 in total contracts for the year), lost out heavily in the building category (off 14%). But they showed a slight increase in the other-than-building category, with 2% more firms

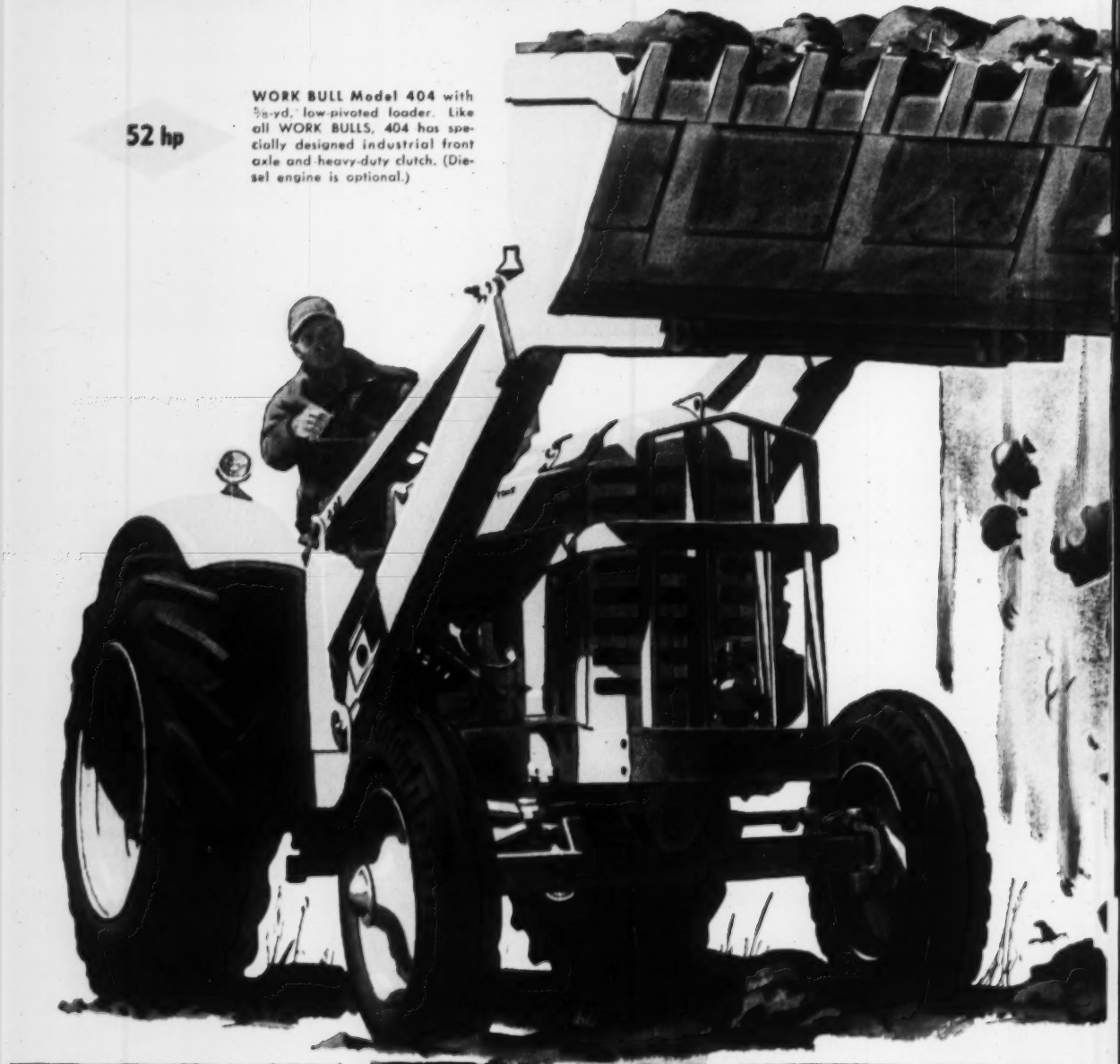
How Contractors Doing $100,000 or More New Construction Per Year Increased from 1940-1955 — By Type of Work and Size of Firm

Based on Contracts Reported by Engineering News-Record and Construction Daily

	Other Than Building Construction Size				Building Construction Size				
	$1,000,000 and over	$500,000-$1,000,000	$100,000-$500,000	Total	$1,000,000 and over	$500,000-$1,000,000	$100,000-$500,000	Total	Grand Total
1940	165	213	1,160	1,538	310	178	711	1,199	2,737
1941	290	247	1,257	1,804	429	239	868	1,536	3,340
1942	418	417	1,074	1,909	617	404	693	1,714	3,623
1943	213	219	928	1,360	302	241	621	1,164	2,524
1944	124	128	734	986	148	98	482	728	1,714
1945	108	145	843	1,096	207	163	747	1,117	2,213
1946	326	434	1,511	2,271	333	290	1,090	1,713	3,984
1947	360	461	1,688	2,509	398	330	1,067	1,795	4,304
1948	473	529	1,806	2,808	534	398	1,079	2,011	4,819
1949	444	532	2,049	3,025	615	484	1,000	2,099	5,124
1950	716	629	2,313	3,658	1,061	684	1,483	3,228	6,886
1951	851	653	2,132	3,636	1,057	653	1,391	3,101	6,737
1952	985	760	2,464	4,209	1,127	688	1,396	3,211	7,420
1953	1,035	746	2,537	4,318	1,149	707	1,490	3,346	7,664
1954	1,064	840	2,646	4,550	1,196	686	1,401	3,283	7,833
1955	1,234	893	2,703	4,830	1,284	662	1,210	3,156	7,986

GREAT NEW IDEA in

52 hp **WORK BULL Model 404** with ⅝-yd. low-pivoted loader. Like all WORK BULLS, 404 has specially designed industrial front axle and heavy-duty clutch. (Diesel engine is optional.)



42 hp **WORK BULL Model 303** with angle dozer and backhoe. Gasoline engine, standard, offers high torque at low speed for better lugging. (Diesel optional.)

34 hp **WORK BULL Model 202** with hydraulic-controlled hoe. Most of the WORK BULL attachments can be switched in 5 to 15 minutes in the field — without special gear.

42 hp **Davis PIT BULL** with ⅞ yd loader features torque converter, reversing clutches and 5 speeds forward, 5 reverse. In many cases it outworks high-priced, single-purpose rigs.

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Contractors! Industries! Utilities! Profit from this new idea in greater machine utility and efficiency. Get the benefits of low cost attachment interchangeability . . . the high-profit performance of tools matched to power and speed . . . the adaptability of job-matched equipment to replace or supplement high-priced, single-purpose units.

What's more, you enjoy the advantages of a single sales and service source — a complete package — available only in the low-cost WORK BULL line.

New, and built to excel where other wheel tractors fail, WORK BULLS pay off in a wide variety of applications . . .

As primary equipment, WORK BULLS put former hand work on a power basis . . . efficiently handle scattered, work-and-run assignments.

As backup machines, WORK BULLS team with medium-priced, single-purpose equipment . . . give you the power equipment ratio that exactly fits the job.

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IMPORTANT NOTE TO RETAIL DISTRIBUTORS — WORK BULL franchises are still available in a few key areas. Write or wire for details.

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Fork Lift Model 202 has lifting capacity of 1500 lbs at full height, 4000 lbs at half height. Optional mast gives lift heights to 21 ft. Works on or off hard surface.

Look at this wide choice of integrated WORK BULL attachments!

LOADERS—9 or 11 cu. ft.; ⅝-yd. or ⅞-yd.

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Contractor New Business, by Size of Firm, 1951—1955

Based on contracts reported by Engineering News-Record and Construction Daily

Size of contractor based on value of contracts	Contractors, Projects, Contracts					Percentage Distribution				
	1955	1954	1953	1952	1951	1955	1954	1953	1952	1951
TOTAL All Groups										
Contractors number	7,986	7,833	7,664	7,420	6,737	100 0	100 0	100 0	100 0	100 0
Projects number	17,511	17,493	16,523	15,380	13,856	100 0	100 0	100 0	100 0	100 0
Contracts value (mil)	$11,890	$9,875	$10,870	$10,687	$9,571	100 0	100 0	100 0	100 0	100 0
$1,000,000 or more										
Contractors number	2,518	2,260	2,184	2,112	1,980	31 6	28 9	28 5	28 5	28 3
Projects number	8,890	8,150	7,490	6,791	6,088	50 8	46 6	45 3	44 2	43 9
Contracts value (mil)	$9,834	$7,774	$8,839	$8,751	$7,747	82 7	78 7	81 3	81 9	80 9
$500,000 $1,000,000										
Contractors number	1,555	1,526	1,453	1,448	1,306	19 4	19 5	19 0	19 5	19 4
Projects number	3,303	3,452	3,215	3,087	2,697	18 9	19 7	19 5	20 1	19 5
Contracts value (mil)	$1,038	$1,039	$999	$953	$889	8 7	10 5	9 2	8 9	9 3
$100,000 $500,000										
Contractors number	3,913	4,047	4,027	3,860	3,523	49 0	51 6	52 5	52 0	52 3
Projects number	5,318	5,891	5,818	5,502	5,071	30 3	33 7	35 2	35 8	36 6
Contracts value (mil)	$1,019	$1,063	$1,032	$983	$935	8 6	7 6	9 5	9 2	9 8

in this group than in 1954.

Small contractors still account for the biggest single group in the ENR analysis. Last year, there were 3,913 of them, off 3% from '54.

But, smaller contractors handled a smaller number of projects than in 1954, down 10%, and the total dollar volume of the group was down 4%.

Street and road projects continued to attract more smaller contractors than any other type of construction. But the number of smaller contractors doing highway work (1,125) was down 6% last year.

These smaller firms also won more contracts for sewerage work than either the medium-size contractors or the million-dollar contractors.

• **The big get bigger**—Aside from street and road projects and sewerage work, smaller firms seem to be losing more and more of the total construction market to the bigger contractors.

This is partly because more and more firms are joining the million-dollar contractor class, which last year accounted as a group for nearly one-third of the total contractors covered in the ENR analysis.

Significantly, the million-dollar contractor group last year handled nearly 83% of the total dollar volume of contract construction reported by Engineering-News-Record.

• **Switch to heavy construction**—The fast-growing ranks of contractors who have moved into the million-dollar class are becoming more and more important in the heavy construction field.

There were 16% more million dollar firms in the other-than-building category last year than in 1954. The medium-size contractor group showed a 6% gain in heavy construction and the smaller construction firms, a slight 2% increase.

This other-than-building category includes waterworks, sewerage, bridges, streets and roads, earthwork and waterways, airports and unclassified construction (such as pipelines).

For this type of work, the million dollar contractors took on 12% more projects than in 1954 and their dollar volume was up a thumping 31%. Their gains were far higher than those of the medium and smaller contractor categories.

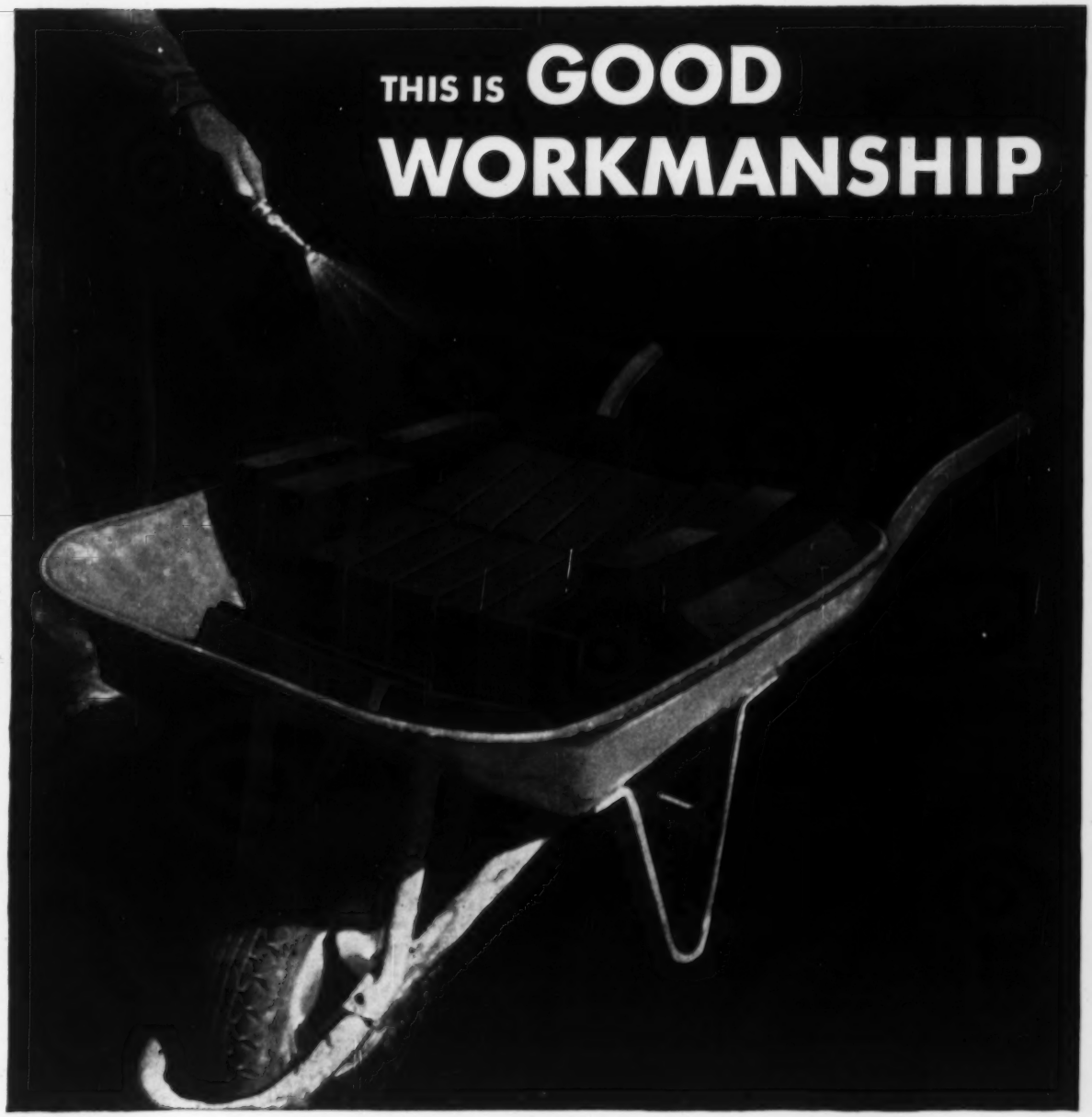
• **Building contractors**—Slightly more than half of the million dollar contractors turned up in the building field last year. The ENR figures show that 1,284 contractors signed up $1 million or more in new contracts in the building field in 1955. That's a gain of 7% over 1954.

The total projects handled by this group rose 5%. But the dollar value of building contracts won by the million dollar group climbed 24% over the previous year.

Contractor New Business by Size of Firm—1955

Reported by Engineering News-Record and Construction Daily

Type of Work	Firms with $1,000,000 or more in construction contracts						Firms with $500,000-$1,000,000 in construction contracts						Firms with $100,000-$500,000 in construction contracts					
	Number of Contractors		Number of Projects		Contract Value (millions)		Number of Contractors		Number of Projects		Contract Value (millions)		Number of Contractors		Number of Projects		Contract Value (millions)	
	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54	1955	% Chg. fr '54
TOTAL	2,518	+11	8,890	+ 9	$9,834	+26	1,555	+ 2	3,303	— 4	$1,038	— 0.1	3,913	— 3	5,318	—10	$1,019	— 4
Total Other than building	1,234	+16	5,312	+12	$3,996	+31	893	+ 6	2,377	— 1	$939	+12	2,703	+ 2	4,031	— 7	$653	+ 3
Waterworks	216	+ 2	406	— 3	280	+45	107	— 7	195	+ 1	38	+12	356	— 0.3	460	— 3	61	+15
Sewerage	233	— 4	452	— 7	217	— 3	158	+18	292	+12	69	+15	495	+ 4	900	— 6	101	+10
Bridges	302	+ 6	565	+13	382	+11	123	—12	201	—11	74	+40	258	+ 0.4	323	—10	54	+ 6
Streets and roads	708	+21	2,567	+ 7	1,426	+19	483	+ 5	1,170	— 7	296	+ 7	1,125	— 6	1,635	—13	263	— 4
Earthwork & waterways	245	+20	371	+32	944	+175	27	— 7	125	+ 2	28	— 7	227	— 3	263	—15	38	— 3
Airports	349	+40	643	+61	530	+24	139	+18	212	+21	69	+23	321	+35	359	+37	67	+49
Unclassified	277	+ 8	368	+13	567	+23	130	— 4	182	+ 4	65	+ 8	368	— 7	391	—10	69	—13
Federal (incl. above)	506	+20	955	+38	846	+33	212	— 0.5	341	+ 5	120	+20	544	+16	616	+17	112	+27
Total Building	1,284	+ 7	3,578	+ 5	$5,838	+24	662	— 3	926	—11	$399	—15	1,210	—14	1,287	—17	$366	—15
Industrial	495	+ 3	925	+ 2	2,309	+34	153	— 6	216	— 8	17	—74	483	— 2	552	— 3	99	— 1
Mass housing, commercial, public	1,123	+ 6	2,653	+ 7	3,529	+18	583	— 7	710	—13	382	— 5	732	—21	735	—25	267	—19
Federal (incl. above)	104	—10	120	+20	343	+158	27	—10	36	+44	17	+20	58	+12	66	+22	17	+42



GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes wetting the brick—completely filling the head and bed joints—and back-plastering the face brick.

Expect trouble when dry, absorbent brick are placed in the wall. If their rate of absorption is too high at the time they are laid, they will suck the water out of the mortar too fast, even though the mortar has high water-retaining capacity. The result may be a poor bond, and a leaky wall.

Brixment mortar has high water-retaining capacity. It resists the sucking action of the brick. It stays plastic and workable longer. Brixment mortar therefore provides added protection against excessive absorption—but even when Brixment mortar is used, absorbent brick should still be wetted.

In addition to great plasticity, high water-retaining capacity, and bonding quality, Brixment mortar has great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

BRIXMENT

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

UA Renews Industrial Claims

At 1956 convention, plumbers and pipefitters stress right to factory work and need for more apprentices

Jurisdictional problems afforded one of the liveliest issues on the UA agenda when the plumbers and pipefitters held their 1956 convention in Kansas City, Mo., last week.

The UA pledged itself "to follow a policy of recognizing its full trade jurisdiction as completely unrestrained and unimpaired by the merger" until the special AFL-CIO Joint Committee comes up with a "satisfactory" solution. That committee recently ended a two-day session (ENR Aug. 9, p. 23) with no tangible results and has another meeting next week.

• **Basic principles**—Although the UA had no solution of its own to offer, two basic principles were stressed: (1) Building construction and major alteration and repair, wherever performed, belong exclusively to the building trades. (2) As recognized by the AFL-CIO constitution, craft unions have a definite place, alongside industrial unions, in industrial plants.

"If we don't keep our jobs inside the plant," warned James A. Brownlow, UA member and president of the Metal Trades Department, "we will end up with nothing on the outside either."

Net result is this statement of the general officers: "The United Association will, in a spirit of good will, insist upon militant organizing to the full limits of its traditional jurisdiction both in the factory and on the construction job."

• **Family problems**—As to jurisdictional problems within the building trades, greatest friction was seen to exist with sheet metal workers, carpenters, iron workers and laborers.

Use of national agreements between the UA and conflicting unions were urged as the best solution to the problem and, according to the General Officers' report, efforts will be continued in that direction.

Meanwhile, UA suggests that some of the tension can be eased if all the building trades will respect (1) the jurisdiction validly granted to other unions and (2) the decisions which the Joint Board has rendered.

• **Apprentices**—Serious consideration was also given to the necessity of bringing more and better craftsmen into the union. Warning that "our position in the industry must suffer unless we take positive, corrective action," UA President Peter Schoemann cited these disturbing facts:

• The union's losing more journeymen than it's getting through apprenticeship. It's admitting to membership more journeymen—either specialists or semi-trained men—than apprentices. Partly trained workers were described as a "burden to themselves and a danger to our union scales."

According to Schoemann, the UA is attempting to meet this challenge by stepping up its training program—now described by Bureau of Apprenticeship Director William Patterson as "one of the best in the nation." More coordinators have been added and more schools established.

• **Taft-Hartley**—During the convention, a strong attack upon the Taft-Hartley Act was made by building trades President Richard Gray, who tied the failure to get act amended to the split over jurisdictional conflicts between craft and industrial unions.

Noting that the act places no other branch of labor in the "inequitable position we are in," Gray again called for relief from the act's secondary boycott provisions, the right to make prehire contracts, repeal of the mandatory injunction provisions as applied to jurisdictional disputes, and elimination of Section 14(B), which supports right-to-work laws.

He accused the Associated General Contractors of promoting right-to-work laws, and took them to task for failing to help the building trades secure remedial legislation.

• **Bargaining trends**—And on another front, James Brownlow provided some food for thought for both contractors and workers when he criticized:

(1) Long term contracts—because they give union leaders, as opposed to rank-and-file members, too much power.

(2) Emphasis on fringe benefits—because a union's principal task is to get higher wages and shorter hours.

(3) Linking wage increases to the cost of living—because workers want to raise standard of living, not stand still.

• **Management recommendations**—The delegates, who reelected Peter T. Schoemann to a five-year term as general president, took time out to listen to their own employers, whose central theme was greater cooperation between management and labor.

From William A. Landers, President of the National Association of Plumbing Contractors, came an invitation for the union to join his group and the Heating and Air Conditioning Contractors in a program to "review tools, materials, and methods to increase production, tied in with an expanded sales effort by contractors."

And looking at jurisdictional disputes, George Hall, head of the Mechanical Contractors Association of America, had this to say: "Strikes, as a means of producing agreement, should be considered a disgraceful failure. I would like to see every working agreement contain an absolute requirement that every unresolved dispute under the agreement be submitted to the Industrial Relations Council after necessary steps had first been taken at the local level. . . ."

Teamster Local Bows out Of Area-wide Bargaining

Last week in New York, teamsters' Local 807 broke away from the practice of area-wide collective bargaining—a procedure strongly favored by its international union.

Independent negotiation of a new four-year contract with the Local Cartage Conference of the Empire State Highway Transportation Association, Inc. was reportedly undertaken to block what some consider to be an attempt on the part of international vice president James Hoffa to gain control of the teamsters' local Joint Council. Chairman of the union's Central Conference (Midwest), Hoffa was a principal figure in the controversial alliance with the International Longshoremen's Association and reportedly backed John O'Rourke in a recent attempt to unseat Joint Council president Martin T. Lacey.

In addition to a 9-cent wage increase, the new contract gives members of the local another 4 cents an hour for welfare and 5½ cents an hour more for their pension fund.

The local's departure from union practice, however, is not considered a disavowal of the principle of area-wide bargaining. Said the local's secretary-treasurer Thomas Hickey: "These area-wide committees will come more and more into play in the future."

Plumbers Duck Kohler Fight

Turn down resolutions for direct participation but ask that government contracts curb the use of Kohler equipment

The plumbers union placed a limit on the role that it will play in one of the biggest boycotts in history when it rejected a proposal that it become a direct participant in the long and bitter Kohler strike.

Holding its 27th Annual Convention in Kansas City, Mo., last week (see page 114), the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry turned down two resolutions urging union members to refuse to handle Kohler products on construction projects and to boycott firms using plumbing fixtures manufactured by the struck plant in Sheboygan, Wisc. But the delegates did approve a resolution requesting the government not to grant contracts to Kohler Co. or to appropriate funds for the purchase of Kohler equipment while the dispute continues.

The proposals had been advanced as part of a highly organized, nationwide campaign of the United Automobile Workers, whose Local 833 has been on strike since April 5, 1954. Ever since the dispute began, "Kohlerism" has been a rallying point for labor, and UAW efforts to build an effective boycott through its "don't buy Kohler" campaign have won wide support.

• **Its genesis**—The original issues have long since grown obscure, and labor's fight has become one of self-preservation.

Back in 1952, Kohler workers voted to affiliate with the UAW. The strike was called following a breakdown in negotiations for its second contract. Union demands, which included higher pay, noncontributory pensions, arbitration, and full seniority protection, were labeled by Kohler as "extravagant demands . . . which would have vested much of the operating control of the company in the union." UAW was accused of "militant unionism," of violence and terrorism, and a "union busting" label was pinned on Kohler. Said the UAW: "The purpose of Kohlerism is to reduce wages, weaken labor and destroy unions." Striking workers have been replaced by nonunion help, and the company is still in business—and profitably so, it reports.

• **The boycott**—But spurred on by the concept of unity inspired by the AFL-CIO merger, the basic issue of "Kohlerism" caught fire. Financial contributions and food caravans poured in to Kohler strikers, along with pledges to support an economic boycott.

Perhaps the most significant effect of the boycott now lies in resolutions such as those passed by the Massachusetts General Assembly and a number of city councils either urging nonuse or forbidding use of Kohler products by contractors on government projects.

Meanwhile, UAW representatives are conducting a relentless campaign for additional resolutions of the same kind and to convince both union members and the general public that Kohler products are taboo.

• **Some limitations**—So far, the help of brother unions has been largely indirect.

During the AFL-CIO convention, for example, the pitch was given in a unanimously adopted resolution that "urged" all members of organized labor "to help" the UAW cause by "refusing to buy and urging all fair-minded people not to buy" Kohler ware.

The same strategy—and some of the cogent reasons for it—were advanced several months ago by UA President Peter T. Schoemann in an open letter to all UA members, when he candidly said: "You as an individual can help the Kohler workers by requesting Master Plumbers, your employers, your friends, and the purchasing public at large, and other trade union members in your locality not to purchase Kohler plumbing wares and equipment.

"I caution you, however, that during the course of your employment you must handle and install all Kohler products. If you should refuse to handle and install Kohler products on the job, such actions would be a secondary boycott in violation of the Taft-Hartley Act and other State Laws. Likewise, you cannot and must not request employees of other employers not to handle and install Kohler products during the course of their employment."

BLS Looks at Construction Wages

Increases in union wage scales for construction workers during the second quarter of this year amounted to 10 cents an hour in one out of every four instances, and to 15 cents in one out of every five, according to the U.S. Labor Department's Bureau of Labor Statistics.

The result, says BLS, is that the estimated average rate of union building trades workers climbed to $3.03 an hour by the end of the quarter—47% above the average for the period 1947-49—and the rate of advance was slightly higher than in the corresponding period of 1955.

The BLS figures are based on a survey of wage scales for seven major trades in 100 cities. Scales are the minimum wage rates (including holiday and vacation payments made directly to the worker each pay period) established by collective bargaining. They do not reflect overtime or premium or apprentice rates.

Higher pay scales were reported for three of every five workers covered by the survey. Increases affected 70% of the bricklayers and carpenters, 65% of the building laborers, 58% of the plasterers and at least 42% of the union workers in other trades.

Since July 1 of last year, the increase in average hourly scales has amounted to 12½ cents for all trades combined and has varied from 11 to 16 cents for the individual trades surveyed, the survey reveals. Average annual increases and current average rate levels, by trades, shape up like this:

Bricklayers	$0.159	$3.63
Carpenters	.124	3.13
Electricians	.163	3.33
Painters	.113	3.02
Plasterers	.107	3.47
Plumbers	.127	3.34
Building laborers	.11	2.18
All trades	.126	3.03

The highest rate reported for each of the trades surveyed was $4.05 for bricklayers (New York), $4.00 for plasterers (New York and Newark), $4.00 for electricians (Newark), $3.75 for plumbers (New York, Newark and Philadelphia), $3.65 for carpenters (New York), $3.35 for painters (Newark), and $3.00 for building laborers (Newark).

(Labor continued on page 119)

KOEHRING WORK CAPACITY *in action . . .*

Lightning struck twice, setting fire to two storage piles of resin-rich pinewood at this Southern powder plant. For 48 hours it raged out of control. Fire-fighting equipment wet paths as two Koehring 605 cranes moved in with orange-peel buckets—widened fire-breaks, salvaged wood.

Meet the new 405 — In eastern Canada, a city street gets its face "lifted" with a 1-yard, 405 hoe. It's a new size, recently added to the Koehring heavy-duty line — digs 43 inches wide over side-cutters, 22½ feet below grade. Check into its other work capacities at bottom of page.

Here are some figures that will interest you:

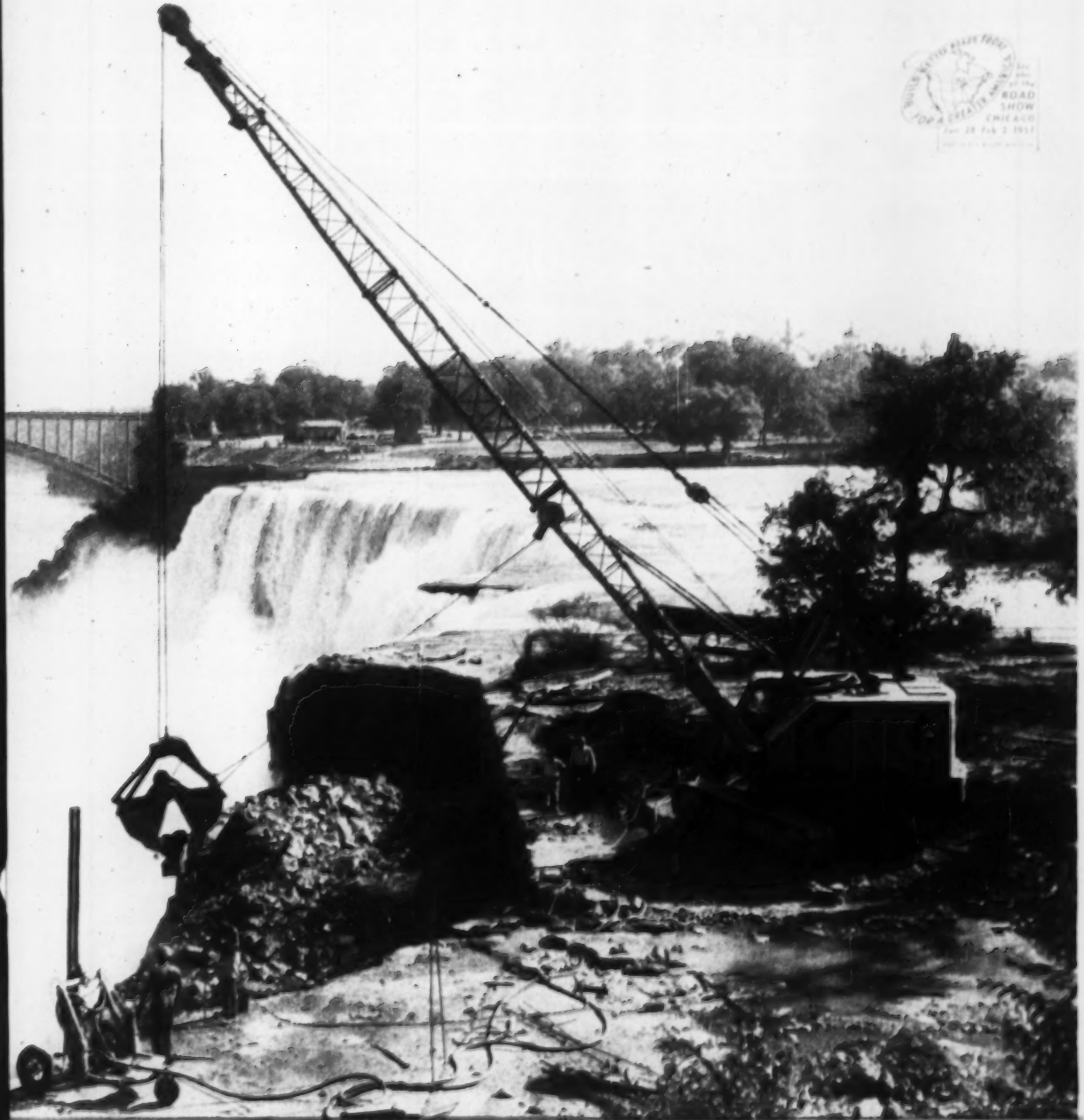
KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	½-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius

Want more information? Call Koehring distributor today.

10 years on the rock pile — Feeding rock to crusher at a Mid-West quarry, veteran ¾-yard Koehring shovel helps produce 1,000 to 1,500 tons of crushed rock per day. Shovel has been in use for over 10 years. In all this time, owner reports that his repair costs have been practically nil.

K623

185,000-ton rock slide — Extensive rock surgery will help curb further stream erosion at Niagara Falls. Work was made necessary when a weakened section of rock broke away from Lookout Point, at eastern end of the American Falls. Here, a Koehring 605 clamshell crane clears away debris and blasted rock.



ROAD SHOW CHICAGO

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

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GENERAL

STRONGER-THAN-STEEL

NYGEN® TIRES

save more money per hour on any job!

GENERAL L. C. M. 24 PLY 16.00-24/25 vs COMPETITIVE BRANDS*

COST PER TIRE HOUR OF SERVICE

AVERAGE COMPETITIVE	.259
GENERAL LCM NYGEN	.224

SAVINGS	
PER TIRE PER HOUR	$... .03½
PER HOUR 10-TIRE TRUCK	$... 0.35
ONE TRUCK 10-HOUR DAY	$... 3.50
ONE TRUCK 200 DAY YEAR	$... 700.00
50 TRUCKS-200 DAY YEAR	$35,000.00

*FROM ACTUAL SERVICE RECORDS

THE GENERAL TRUCK TIRE

Every hour of every day, in quarries and strip mines, on logging and construction jobs the nation over, The General Tire proves its reputation for toughness, dependability and low-cost performance!

THE GENERAL TIRE & RUBBER COMPANY • Akron, Ohio

. . . Labor

Automation Spurs Training For Canadian Electricians

A labor-management-government program to help gear British Columbia's electrical industry to automation is being spearheaded by the 3,000-member International Brotherhood of Electrical Workers, Local 213, in Vancouver.

In an effort to make the IBEW the "most enlightened trade union in western Canada," the Vancouver local has announced it will spend "all that's necessary" in cash to institute a pre-apprentice training program throughout the lower mainland, for the ultimate purpose of improving standards among electricians.

The training scheme, also backed by the Electrical Contractors Association, will get under way next month, when classes commence in the union's big Electrical Hall, in which classroom and workshop space is now being readied. Participating groups include the government's education and labor departments.

The union believes that the rapid development of electronics threatens to leave British Columbia's electricians way behind if a program of this kind is not undertaken. And it hopes that the scheme will also develop the skills of men already trained as electricians into those required for electronics specialists.

Craft Lines Grow Fuzzy For Atomic Specialists

A National Labor Relations Board decision suggests that specialization of skills, particularly in atomic energy plants, may adversely affect the building trades in claiming maintenance workers for union membership.

In a case which arose in Dana, Ind., the board said "no" to U. A. Local 157 when it tried to gain separate recognition for a group of pipefitters and welders at the Dana plant of E. I. duPont.

Said the board: ". . . pipefitters and welders employed at the Dana plant are more specialists than craftsmen, particularly, as the employer . . . has instituted a system of training for all maintenance employees designed to equip them with a secondary skill and thus to achieve the utmost flexibility in meeting the considerable fluctuation in demand for maintenance skills which will occur in the future." As a result, maintenance workers frequently move across the production line and no longer remain "truly craft in character or basically distinct from other employees."

OFFICIAL PROPOSALS

Bids: August 29, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:30 a.m., Eastern Daylight Saving Time, the 29th day of August 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #3, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

Contract No. 180-E. The work of this contract includes all materials, plant, labor and services required to furnish and install in place all items of Food Service Equipment, including Kitchen, Cafeteria, Dishwashing and Can Wash Room Equipment for the Pennsylvania Turnpike Administration Building at the Harrisburg-East Interchange of the Pennsylvania Turnpike System.

Copies of specifications and Contract Documents are on file and open to public inspection on 17 August 1956, at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Contract Documents may be obtained from the Commission upon payment of ten ($10.00) dollars for each set. No refund will be made for contract documents returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for contract documents and specifications.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
John F. Byrne
Secretary and Treasurer

Harrisburg, Pennsylvania
August 13, 1956

Bids: September 11, 1956

Power Authority of The State of New York

ADVERTISEMENT FOR PROPOSALS FOR CONSTRUCTION OF RELOCATION OF NEW YORK STATE HIGHWAY ROUTE 37B BETWEEN TOWN LINE ROAD & LOUISVILLE CORNER SPECIFICATIONS NO. PA-5-11022 ST. LAWRENCE CONTRACT NO. 30

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the relocation of New York State Highway Route 37B between Town Line Road and Louisville Corner, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 11th day of September, 1956, 270 Broadway, Room 1395, New York, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are estimated to be:

505,000 Cubic Yards of Excavation
420,000 Cubic Yards of Embankment and Backfill
6,200 Cubic Yards of Riprap
85,000 Cubic Yards of Foundation Course Gravel
9,000 Cubic Yards of Broken Stone Base Course
6,500 Cubic Yards of Bituminous Macadam Base Course
11,000 Tons of Plant Mix Asphaltic Concrete
7,000 Linear Feet of Cable Guide Railing
1,000 Linear Feet of Reinforced Concrete or Corrugated Metal Culvert Pipe (various sizes)
70 Acres of Seeded Topsoil and Seeding
133,000 Gallons of Bituminous Material

The length of the relocated highway is approximately 6.2 miles.

All work shall be completed on or before June 1, 1958. The pavement shall be completed and the full length of the road opened to traffic on or before September 1, 1957.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Ull, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set and Five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 13, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law, sealed proposals will be received until 10:30 A.M., Daylight Saving Time, on September 13, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 56-6 for
Resurfacing a Portion of Delta Dam on the Mohawk River, near Rome, Oneida County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York
(b) Mr. Lacy Ketchum, District Engineer, 109 North Genesee Street, Utica, New York
(c) Department of Public Works, 270 Broadway, New York City, N. Y.

The deposit for Plans and Proposal Forms for the contract is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Engineer's Estimate of Cost for this contract is $15,000.00.

The proposal for the contract must be submitted in a sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. The proposal must be accompanied by a draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $800.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: September 6, 1956

Proposal No. 892

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
HOLLAND TUNNEL
FABRICATION OF TOLL BOOTHS & CANOPIES

Sealed proposals for furnishing all labor, material and equipment for the fabrication of toll booths and canopies for the Holland Tunnel will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 300, 111 Eighth Avenue, New York 11, N. Y., until 11:00 A.M., Thursday, September 6, 1956, at which time and place said proposals will be opened and read.

Contract documents may be had upon request at the office of the Department of Purchases and Administrative Services, Room 300, 111 Eighth Avenue, New York 11, N. Y.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: September 13, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 13th day of September 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, N. Y.						
Greene (Rte. 42)	FERC 56-72	Shandaken-Lexington, Pt. 2, S.H. 1774 Proj. ER-64(1)	0.34	Stream Channel Improvement	$2,500 Plans $10	$45,000
Greene (Rte. 23)	FERC 56-73	Catskill-South Cairo, S.H. 613 Proj. ER-65(1)	0.54	Stream Channel Improvement	$4,500 Plans $10	80,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
HERKIMER	FASS 56-10	Uehler Road (County Road) Proj. S-466(1)	2.89	Bit. D. S. Treated Gravel Precast-Prestressed Conc. Beam 50'	$17,000 Plans $15	$317,000
DISTRICT No. 3, W. Robinson, District Engineer, Weigh Lock Building, 301 E. Water St., Syracuse, N. Y.						
Onondaga (Rte. 48)	FAC 56-8P FGC 56-9 FASH 56-6P FARC 56-63	City of Syracuse: State Fair Boulevard The Lake Onondaga West Shore Development, Northwest Arterial Connection: Solvay-State Fair-Syracuse, S.H. 1353-1353A, Baldwinsville-State Fair, S.H. 8496 Proj. U-UG-991(5)	7.37 (2.79) (Acc.)	Asp. Conc. Ty. 1A = 9.82 Mi. Misc. Work = 0.34 Mi. 4 Hy. Sep. Comp. I-Beams 135.3', 98', 158.9' and 155.3' 1 RR. Sep. Comp. I-Beam 382' 1 Ped. Over Pass Comp. I-Beam 145.8' 2 Ped. Over Passes I-Beams 153.2' and 153.5' 2 Ped. Over Passes Precast Prestressed Conc. Beams 217.5' and 176' 1 RR. Sep. I-Beam 25' 1 Vehic. Underpass Conc. Rig. Frame 32'	$325,000 Plans $100	5,885,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 W. Main St., Hornell, N. Y.						
Chemung (Rte. 17)	FARC 56-68	Elmira-Horseheads Connection, Pt. 1, F.A.S.H. 54-15 Elmira-Lawrenn, S.H. 5207 Proj. U-221(8)	0.46 (0.70) (Acc.)	Asp. Conc. Opt. = 0.40Mi. Misc. Work = 0.06 Mi. (Cem. Conc. Pavt. on Ramps = 0.70 Mi.) Hy. Sep. Comp. I-Beam 156.8' Br. Comp. Girder = 177.4'	$65,000 Plans $50	1,180,000
Yates (Rte. 14A & 54)	FARC 56-89	Dundee-Penn Yan, S.H. 5324; Penn Yan-Village, S.H. 5291; Penn Yan-Halls Corners, S.H. 5323; Penn Yan-Potter, Pt. 1, S.H. 1596; Keuka-Penn Yan, Pt. 3, S.H. 8523 & Penn Yan Village: Lake Street, S.H. 9325 Proj. F-U-146(2), U-520(7)	4.66	Asp. Conc. Opt. Comp. I-Beam Br. 139'	$100,000 Plans $50	1,790,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 111 Van Duzee St., Watertown, N. Y.						
St. Lawrence (Rte. 37B)	FASSH 56-4	Village of Massena: Center St.-Parker St. Bridge and Interchange Proj. US-467(1)	0.64 (0.60) (Acc.)	Asp. Conc. Opt. Bridge-Welded Plate Girder 80'	$130,000 Plans $25	2,420,000
St. Lawrence (Rte. 37)	FATC 56-1	Massena-South: Side Route, Pt. 1, F.A.S.H. 56-13 Massena-South: Side Route, Pt. 2, F.A.S.H. 55-7 Massena-Helena, Pt. 1, S.H. 1261 Proj. U-580(11)	5.13	Traffic Signal System	$4,000 Plans $10	73,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, N. Y.						
Delaware (Rtes. 28&30)	BWS 56-1	Andes-Margaretville, S.H. 8017 Margaretville-Halcottsville, S.H. 5384	0.46	Sanitary Sewer System = 0.44 Mi. Misc. Work = 0.02 Mi.	$10,000 Plans $10	$171,000
DISTRICT No. 10, M. E. Gocl, District Engineer 325 W. Main Street, Babylon, L. I., N. Y.						
Suffern (Rte. 110)	FGRC 56-70	Huntington-Amityville, Pt. 2, S.H. 1219 Proj. D-AID-U-UG-8(2)	0.22	9" Cem. Conc. Pavt. 2 at 25' Wide = 0.19 Mi. Misc. Work = 0.03 Mi. R.R. Sep. Plate Girder 133'	$40,000 Plans $15	993,000
Kings	FAPE 56-1	Prospect Expressway Cont. 3A Proj. U-1081(2)	0.78 (1.63) (Acc.)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide = 1.13 Mi. Sheet Asp. Pavt. = 1.15 Mi. Misc. Work = 0.13 Mi. 3 Hy. Sep. Steel Girder 114.7', 107.6' and 135.5' 1 Ped. Over Pass Steel Girder 159.7'	$330,000 Plans $100	$6,043,000
Bronx	FAMDE56-1	Major Deegan Exp. & Ext: (Cont. 18) Proj. U-1082(22)	7.33	Landscaping and Misc. Work	$12,000 Plans $15	$213,000
DISTRICT No. 10 (Contd.)						
Nassau & Suffolk	NSP 56-1 CAPSP 56-1 SAGSP 56-1 SSP 56-2 WSP 56-1	Northern State Parkway; Captree State Parkway; Sagtikos State Parkway; Southern State Parkway and Wantagh State Parkway	36.98 (0.90) (Acc.)	Cem. Conc. Pavt. = 0.90 Mi. Fencing, Planting, and Misc. Work = 36.98 Mi.	$12,000 Plans $10	230,000

Any projects in this letting that are on the Federal-Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: October 1, 1956

ADVERTISEMENT FOR BIDS

Sewage Treatment Plant

The Charter Township of Warren,
Macomb County, Michigan

The Charter Township of Warren, Macomb County, Michigan, will receive sealed bids for the construction of a 2.4 M.G.D. sewage treatment plant.

The work includes: service building (with pumping station), filter-dryer building, garage, chlorine building, grit chambers, primary settling tanks, aeration tanks, final settling tanks and chlorine contact chamber.

This work also includes concrete road, earthwork, pipes, valves, pumps, blowers, instrumentation, and process equipment (except dryer and incineration equipment).

Plans will be available after August 20, 1956.

Bids will be received until 2:00 P.M. E.S.T. Monday, October 1, 1956, at the Township Hall at 22720 Van Dyke Avenue, Van Dyke, Michigan, at which time and place all bids will be publicly opened and read aloud. The successful bidder will be required to furnish satisfactory performance and labor bonds.

Contract documents, plans, and specifications will be on file for public inspection after August 20, 1956, at the office of Johnson & Anderson, Inc., Consulting Engineers, 1307 Pontiac State Bank Building, Pontiac, Michigan, and copies may be had by depositing One-Hundred Dollars ($100.00) for each set, which amount will be refunded upon return in good condition of each set within ten (10) days after the opening of bids.

The Charter Township of Warren reserves the right to reject any or all bids and to waive any irregularities in bidding.

A certified check or bank draft payable to the Charter Township of Warren or a satisfactory bid bond executed by the bidder and Surety Company in an amount equal to five percent (5%) of the bid shall be submitted with each bid.

The bid shall be accompanied by a letter from a surety company satisfactory to the Township stating that the necessary bonds will be furnished by it to the contractor bidding in the event the bidder is successful.

No bid may be withdrawn after the scheduled closing time for receipt of the bids for at least thirty days.

Charter Township of Warren
Macomb County, Michigan
HILDEGARDE M. LOWE,
Clerk

Bids: September 14, 1956

Town of Bethlehem, N. Y.

WATER TREATMENT PLANT—
STRUCTURES
ADVERTISEMENT
NOTICE TO CONTRACTORS

Notice is hereby given that sealed bids or proposals in sealed plain wrapper bearing the appropriate identification "Bid for Water Treatment Plant Structure, Contract No. 7, will be received by the Board of Water Commissioners at its office in the Town Hall, Town of Bethlehem, Delmar, New York at 7:30 PM on the 14th of September 1956, and then will be publicly opened and read aloud at a meeting of said Board, to be held at such time and place.

The work includes the sub-structure and super-structure for a 1.5 MGD filter plant including laboratory equipment, appliances, office furniture, entrance roadway at both Water Treatment Plant and Softener Plant, site grading & seeding, connections to existing mains, approximately 216' of 36" drain and overflow piping, interior drain and service water piping, heating, electrical, and other appurtenant work.

Copies of the plans and specifications may be examined at the office of the Town Clerk of the Town of Bethlehem, New York, 332 Delaware Avenue, Delmar, New York or at the office of the Engineers, Benjamin L. Smith & Associates, 11 North Pearl Street, Albany, New York; copies thereof may be purchased from the Board and/or Engineers upon payment of Thirty Dollars ($30.00) for each set of plans and specifications.

Proposals must be submitted on the blank forms provided and in a manner designated therein. Each proposal must be accompanied by a Bid Bond or certified check in an amount equal to Five Per Cent (5%) of the Total bid. The Bid Bonds or Certified Checks of all but the three lowest bidders will be returned within ten days after the opening of bids, while the remaining bonds or checks will be returned as soon as a contract has been executed. The Bid Bond or Certified Check of the successful bidder will be retained to pay any loss of damage to Water District No. 1 and/or Town of Bethlehem, in the event said successful bidder shall refuse or neglect to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

The Board of Water Commissioners reserves the right to consider bids for a period of Forty-Five Days after their opening, and the right is reserved to reject all bids.

BOARD OF WATER COMMISSIONERS,
WATER DISTRICT NO. 1,
TOWN OF BETHLEHEM, NEW YORK
BY: Harold C. Barkhuff, Chairman

Bids: September 11, 1956

Contract 462

ACCESS ROADS AND BRIDGES

SEALED BIDS will be received by the Board of Water Supply, at its office, 13th floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Daylight Saving Time (10:00 A.M. Eastern Standard Time) on Tuesday, September 11, 1956 for Contract 462, for the construction of approximately 1¼ miles of gravel road, a timber highway bridge about 180 feet long; a steel and concrete highway bridge about 250 feet long; a sewage treatment plant; an engineer's office and a soils laboratory; the excavation of exploratory shovel cuts and other incidental work. The location of the proposed work is in the Town of Deposit, Delaware County, New York.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1317, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Republic of Liberia

DEPARTMENT OF PUBLIC WORKS
AND UTILITIES
DIVISION OF HIGHWAYS
MONROVIA, R.L.

PROPOSAL AND CONTRACT
(Route SH1—Gbarnga—Kailahun)
Projects SH 1-B(2), SH 1-C,
SH 1-D, SH1-E
SUPPLEMENT

July 21, 1956.

Paragraphs 4 and 5 of Page 6A of the Standard Government Form of Invitation for Bids—Form No. 20—dated June 15, 1956 for furnishing the materials and performing the work for constructing the Liberia, Gbarnga-Kailahun Projects SH 1-B(2), SH 1-C, SH 1-D and SH 1-E are deleted in their entirety and the following substituted therefor:

> Performance of the contract shall begin within sixty (60) Calendar days after the date of notice to proceed and the contract shall be completed within one thousand eighty (1080) Calendar days, subject to such extensions as may be authorized by the terms of Article 8.6 of "Specifications FP-41."

The second paragraph of the NOTE on page 7 of the Standard Government Form of Invitation for Bids—Form No. 20—is deleted and the following substituted therefor:

> Bidders are required to complete and to submit with their bids the following forms included in the PROPOSAL AND CONTRACT, or exact copies thereof:
>
> Bid schedule
> Bid (Construction Contract)
> Standard Government Form of Bid Bond (Construction or Supply)

ARTICLE 8.6 CONTRACT TIME, DETERMINATION AND EXTENSION OF. The special provision under this article on page 12 of the SPECIAL PROVISIONS is revised to read as follows: "Delete the first sentence of the third paragraph of this article and substitute the following therefor: The contract time shall begin sixty (60) days after the date of receipt by the Contractor of the notice to proceed."

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Projects SH 1-B(2), SH 1-C, SH 1-D, SH 1-E, St. Paul River—Kailahun

Bids: August 30, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Eastern Daylight Saving Time, on August 30, 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 5, MATTYDALE TO JEFFERSON COUNTY LINE, TOWNSHIPS OF CICERO, HASTINGS, PARISH, RICHLAND & SANDY CREEK, ONONDAGA AND OSWEGO COUNTIES, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-93

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Wm. Robinson, District Engineer, 301 East Water Street, Syracuse, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $35,050.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1800.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: September 6, 1956

Power Authority of The State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CONSTRUCTION OF
RELOCATION OF NEW YORK STATE HIGHWAY ROUTE 37 BETWEEN WADDINGTON AND COLES CREEK ST. LAWRENCE COUNTY, NEW YORK SPECIFICATIONS NO. PA-5-11021 ST. LAWRENCE CONTRACT NO. 29

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of relocation of New York State Highway Route 37 and a portion of the Norwood and St. Lawrence Railroad between Waddington and Coles Creek, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 6th day of September, 1956, 270 Broadway, Room 1395, New York, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are: Estimated:

813,000 cu. yds.	Excavation
694,000 cu. yds.	Embankment
26,000 cu. yds.	Riprap
45,000 cu. yds.	Foundation Course Gravel
14,000 cu. yds.	Asphaltic Concrete
115,000 pounds	Corrugated Metal Arch Culverts
6,600 lin. ft.	Railroad Track
1	Bridge 75 Foot Length (Structural Steel Furnished by the Authority)
1	Bridge 300 Foot Length (Structural Steel Furnished by the Authority)

The length of the relocated highway is approximately 5.9 miles.

The length of the relocated railway is approximately one mile.

All work shall be completed on or before June 1, 1958.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Chl. Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1395, New York 7, New York, upon application and prepayment of a fee of Twenty-five ($25.00) dollars per initial set and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. 108-4748) will be received at Denver, Colorado, until September 25, 1956, for furnishing four motor-driven, horizontal, centrifugal-type pumping units, each having a capacity of 444 cfs under a total head of 85-feet for White Bluffs Pumping Plant No. 1, Columbia Basin Project, Washington. Delivery is desired within 330 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4751) will be received at Weaverville, California, until October 2, 1956, for furnishing labor and materials for Trinity River Bridge Superstructure and County Road Relocation, Station 5+55 to Station 8+50 for Trinity Dam, Central Valley Project, California. Location near Lewiston, California, in Trinity County. Principal items are 235,000 lbs. furnishing and erecting structural steel; 230 cu. yds. concrete in bridge slab; and other work. Completion time 330 days. For particulars, address Bureau of Reclamation, Weaverville, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4697) will be received at Glendo, Wyoming, until September 25, 1956, for furnishing labor and materials for Completion of Glendo Power Plant and Switchyard, Missouri River Basin Project, Wyoming. Location near Glendo, Wyoming. Principal items are furnishing and placing 335,000 lbs. reinforcement bars; furnishing and handling 6,250 barrels cement; furnishing and erecting 285,000 lbs. of steel for power plant superstructure; furnishing and erecting insulated metal panel sidewalls; furnishing and installing heating and ventilating system in power plant; installing and testing two 16,750-horsepower hydraulic turbines; furnishing and erecting 130,000 lbs. switchyard steel structures; installing distribution boards; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, P. O. Box 127, Glendo, Wyoming; or Building 53, or 46, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, August 14, 1956. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C. S. T., SEPTEMBER 7, 1956, for the construction of Project 3H11,13,19, Natchez Trace Parkway, Webster and Choctaw Counties, Mississippi. Three Reinforced Concrete Bridges, Approaches and other work over Highway US 82, Mississippi Highway 9, and a county road. Aggregate length: 0.271 mile. The approximate quantities of the more important items are as follows: 96,300 cu. yd. Excavation and Borrow, 1,900 cu. yd. Concrete, 325,000 lb. Reinforcing Steel, and 5,000 sq. yd. Cement Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4749) will be received at Ephrata, Washington, until September 20, 1956, for furnishing labor and materials for Radial Gate Check Drop, Station 1369+11 for Potholes East Canal, Columbia Basin Project, Washington. Location near Othello, Washington. Principal items are 15,250 cu. yds. excavation; 850 cu. yds. concrete in structures, and other work. Completion time 170 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Dlv.
New York: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'S and engineers considered. Full information and references in first letter requested. P-2316, Engineering News-Record.

Wanted: Civil Engineers for permanent work on bridges in both design and field offices of established consulting engineer. Please send education and experience resume, references, and salary requirement. P-2368, Engineering News-Record.

Associate Professor of Civil Engineering—BS & MS in Civil Engineering to teach engineering mechanics, surveying, highway & reinforced concrete. Salary $5400 for nine months. Location—Texas. P-2297, Engineering News-Record.

Construction engineer with college degree in engineering or equivalent, practical experience in light construction (shopping centers, motor hotels). Job consists of estimating, purchasing and general supervision of construction. Excellent and permanent opportunity. Give age, experience, salary desired and references. P-2465, Engineering News-Record.

Wanted — Heavy and highway construction superintendent, capable of running large grading, drainage and bridge work. State experience, age and educational background. P-2473, Engineering News-Record.

Salesman Rockland County, N. Y., road building materials and construction. Old established business requires a live young man with car. Experience preferable but not required. Interest in bituminous pavement construction essential. Salary plus expenses. Write Box 120, Haverstraw, New York.

Young Man — (25-40) — Civil Engineer for bituminous road work—costs, etc. Car furnished; steady employment and advancement, wages commensurate with ability. Write Box 120, Haverstraw, N. Y.

Instrument men, party chiefs, asphalt & soil Inspectors. Lab. Tech.—O'seas airbase, mild climate. Call or write Mr. Lambert, Patchen & Zimmerman, 120 Greenwich St., NYC RE 2-4187.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Gen'l Superintendent qualified engineer for North Jersey contractor, must have proven experience on industrial buildings & gov't. projects. Salary open. P-2608, Engineering News-Record.

Wanted—Young man, age 23 to 35, with water works experience to work for growing private water utility in active Illinois city. Excellent opportunity as assistant to manager. Salary open. Please submit complete resume stating education, age, experience, salary desired and date of availability. P-2609, Engineering News-Record.

Structural Engineer, experienced designer reinforced concrete and steel. Permanent position with established firm. Write complete details, education, experience, salary expected to H. J. Ross Associates, 3047 Biscayne Blvd., Miami, Fla.

Designers-Detailers—Well established consultant located in New York State has permanent openings for designers and detailers experienced in structural steel and reinforced concrete structures for highways. Send resume to P-2572, Engineering News-Record.

(Continued on opposite page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission

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$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12 N. Y. 36, N. Y.

POSITIONS VACANT
(Continued from opposite page)

Supervisory positions for High Dam Construction in India. Former Supervisory employees or those now in supervisory positions who have worked with me on projects in the past and are interested in foreign work. Contact me by letter: M. H. Slocum, 501 East Pine Street, Alhambra, California.

Structural Engineers for building design work. Consulting Engineers Office. Write training, experience and salary. Saul Shaw & Co., 24 Commerce St., Newark, N. J.

Wanted—Project Manager with extensive experience in the supervision and management of large scale concrete paving operations. Permanent position with rapidly growing organization. State experience, age, salary, availability and references. Reply P-2622, Engineering News-Record.

Soils Engineer—wanted by large engineering and construction organization for work on large hydro-electric development. Position also available in New York office. Please send complete resume to: P-2602, Engineering News-Record.

Hydro Superintendent for 35,000 KW plant in central California. Some technical training desirable. Excellent housing, complete benefit plan. Send qualifications to P-2634, Engineering News-Record.

Civil Engineers. Long established consulting engineer, eastern United States, has openings for graduate engineers with experience in either highway and bridge design or field and laboratory experienec in soil mechanics. Positions permanent. Liberal employee beenfits. Salaries open. Send resume to P-2627, Engineering News-Record.

Mechanical Engineer recent graduate to work in Engineering Office of medium sized chemical company, to work on plant layout, design of buildings and equipment. The Glens Falls area of about 30,000 population is ideally located near Lake George and other vacation areas. Progressive community with good schools and living conditions. Write Personnel Department, Imperial Paper and Color Corporation, Glens Falls, New York.

Structural Engineer or C.E. graduate, to assist chief engineer in charge of design, detail, fabrication and erection of structural steel. Knowledge of drawing room and structural fabricating shop practice required. Salary open. Submit complete resume and photo to Southern Iron Works, Inc., P.O. Box 130, Alexandria, Va.

Civil Engineers, experienced in design of sewerage systems and treatment plant. Excellent opportunity for young sanitary major in expanding well-established firm. Location southern Connecticut. Genovese & Associates, 294 Elm Street, New Haven, Connecticut.

Estimator—to make quantity take-offs, prepare detailed preliminary and contract cost estimates for building and engineering construction of industrial type. Must be experienced and conversant with prevailing costs, preferably in Middle Atlantic Area. In reply provide detailed information, previous experience and give references. Also, state salary and when available. Clark, Buhr & Nexsen, Architects & Engineers, P. O. Box 9628, Norfolk, Virginia.

Construction or Railway Equipment Salesman. Young man, single or married, college graduate or engineering education, sales experience desirable but not essential. Willing learn sell and buy construction, railway equipment by correspondence and phone. Must be sober, industrious, reliable. St. Louis district. Give full details. P-2737, Engineering News-Record.

POSITIONS VACANT

Assistant City Engineer for general municipal work. Send personal data. Salary range $4950-$5430 plus benefits. City Engineer, Watertown, New York.

Civil Engineer: City of Middletown, Ohio, population (42,000) invites applications. Registration as a professional engineer in State of Ohio required. Salary, starting $500.58 per month, with increase after six months and each years thereafter for next three years to final salary of $600.70, also fringe benefits. Desirable qualifications: Design of Municipal Improvements, pavements, sanitary and storm sewers, buildings, retaining walls, supervise field parties and construction projects. Inquiries and personnel record data should be directed to C. A. Boeke, Director of Public Service, Municipal Building, P. O. Box 530, Middletown, Ohio.

Soils Engineer—C. E. for design work in our New York Office. F. R. Harris, Inc., 27 William St., N.Y.C.

Assistant to County Engineer—Central New Jersey area. Design and construction of secondary roads and bridges and the development of a road building program. Must have B.S. in Civil Engineering or equivalent. State experience, expected salary and references. Applications answered and kept confidential. P-2721, Engineering News-Record.

Construction Superintendent required by New York firm. Must be experienced in earth and rock moving—utility work—heavy structute construction and paving. Send resume of experience, age, availability and salary desired. P-2712, Engineering News-Record.

Wanted: Young engineer with field experience in heavy construction for quantity take off and estimating assistance in Pittsburgh office of widely known construction company. P-2707, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

Sales Engineer—Graduate C.E. with structural background to promote, estimate and close subcontracts gypsum and precast concrete roof and floor systems. Write giving qualifications to: Martin Fireproofing Corp., Box 27, Buffalo 17, New York.

POSITIONS WANTED

Civil Engineer, (soils, concrete), BSCE, 28, experience in construction engineering, supervision and control of earthwork and concrete. Desires permanent position. PW-2508, Engineering News-Record.

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Construction Manager. Industrial constr. Civil Engr., job-planning, cost-control, estimating & management specialist. Now situated Phoenix. Confidential replies. Reply PW-2527, Engineering News-Record.

Structural Engineer, registered, MS degree, nine years experience miscellaneous types building design in consulting offices. Desires responsible position in architectural office or consulting office with architectural clients. Preferred location Southern Coastal Area or Southwest. PW-2679, Engineering News-Record.

Construction Executive—Grad. Eng. under 40, seeks a top position. Accustomed to assuming responsibility as head of heavy construction company (medium size work) and earning in excess of $25,000. PW-2610, Engineering News-Record.

POSITIONS WANTED

Distr. Factory Rep., 37, College Grad., 8 yrs. experience shovel, scraper, other heavy equip. Desire Western location. References and resume furnished. Reply PW-2574, Engineering News-Record.

Construction Management—BSCE, 36, excellent experience in heavy construction including field supervision, estimating, bidding and management of concrete structures, earthworks and powerplants, interested in connection with moderate size contractor with growth possibilities in Rocky Mtn. or Southwest. Can consider participation arrangement. PW-2515, Engineering News-Record.

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Construction Executive with 18 years experience in heavy construction with some municipal work. Experienced in managing a construction contracting firm. Seeks position managing company of branch. Will give consideration to position in French or Spanish -speaking country. Please describe position available and possible earnings. PW-2711, Engineering News-Record.

Construction Supt. 6 yrs. Experience in building and heavy const. 29 years of age, B.S. in building const. Prefer permanent move to central or north Florida. PW-2708, Engineering News-Record.

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P-2652, Engineering News-Record
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P-2307, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N.Y. 36, N. Y.

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P-2728, Engineering News-Record
Class Adv. Dept., P.O. Box 12, N. Y. 36, N. Y.

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P-8324, Engineering News-Record
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P-2252, Engineering News-Record
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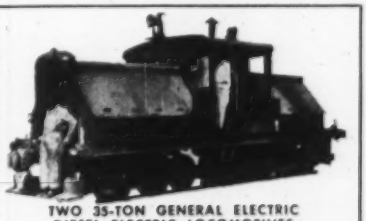

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A Courageous Veto

PRESIDENT EISENHOWER'S VETO of the rivers and harbors bill was a courageous act in an election year, but one that was badly needed. Thirty-two of the projects that would have been authorized by the bill, involving the expenditure of half a billion dollars, had not been subject to the full review called for by law. The purpose of that review is to make certain that the benefits to be derived from any particular project justify the federal expenditure required to build it. Only in that way can "pork-barrel" projects be kept from getting Congressional approval along with needed work.

As the President pointed out in his veto message, no project is delayed by his action because the bill was only an authorization bill, not an appropriation of money to permit start of work. The next Congress will have to appropriate the money, and by that time the unapproved projects all can be reviewed and authorized if found to be justified. Hence the tears shed by many Congressmen on reading the President's veto message are of the crocodile variety. No work on any project has been stopped at the veto.

Impasse on the Columbia

NEVER SINCE THE CONSUMMATION of the Boundary Treaty of 1909 between Canada and the United States have the countries approached an international water problem with such divergent stands as they have taken on the Columbia River question, set forth on page 21 of this issue. Nor have they ever faced a boundary water problem of such complexity.

It would be expected that each country might put its best statesmanship forward, as has been done so many times in the past, in an effort to create as calm and dignified a setting as possible in which negotiations of such gravity are best performed. But the sad truth is that, by their statements, some adherents on both sides of the border have tended to create such seemingly unyielding positions as to make the attainment of mutual accord difficult—even before serious diplomatic and technical negotiations have begun. Such a situation places both countries completely out of character with respect to their historic relationship of friendliness and cooperation-symbolized by the 4,500 miles of undefended border between them.

It is encouraging that the two countries are considering high-level diplomatic negotiations on the Columbia; yet it is with a sense of loss that one notes this is the first international water issue to be taken out of the hands of the International Joint Commission—even though it may be only temporarily so.

Once the seeds of acrimony, which have been planted, are ploughed under, it is to be hoped that each side will make concerted effort to understand better the needs and motives of the other. Very little such understanding seems to exist at this time.

Canada's desire to develop the Thompson-Fraser system in the most economically feasible manner is certainly reasonable. And particularly so if, as in her view, the plan represents the best overall use of natural resources in the entire Columbia and Fraser River basins. But for Canada to rely on a strictly legalistic interpretation of the 1909 treaty as a basis for disregarding the effect of diversion on downstream installations is not in conformance with the spirit of reasonableness that the Boundary Treaty presupposed.

For its part, the United States has been proceeding in good faith and not without ample publicity in its development of the Columbia River basin in the Pacific Northwest, and is reasonably entitled to some consideration of her existing, or vested, interests. But U. S. adherents must rid themselves of the idea that Canada's diversion proposals are somehow immoral.

Clearly, it is time that both sides put forth more conciliatory effort toward achieving a reasonable solution to the current impasse on the Columbia.

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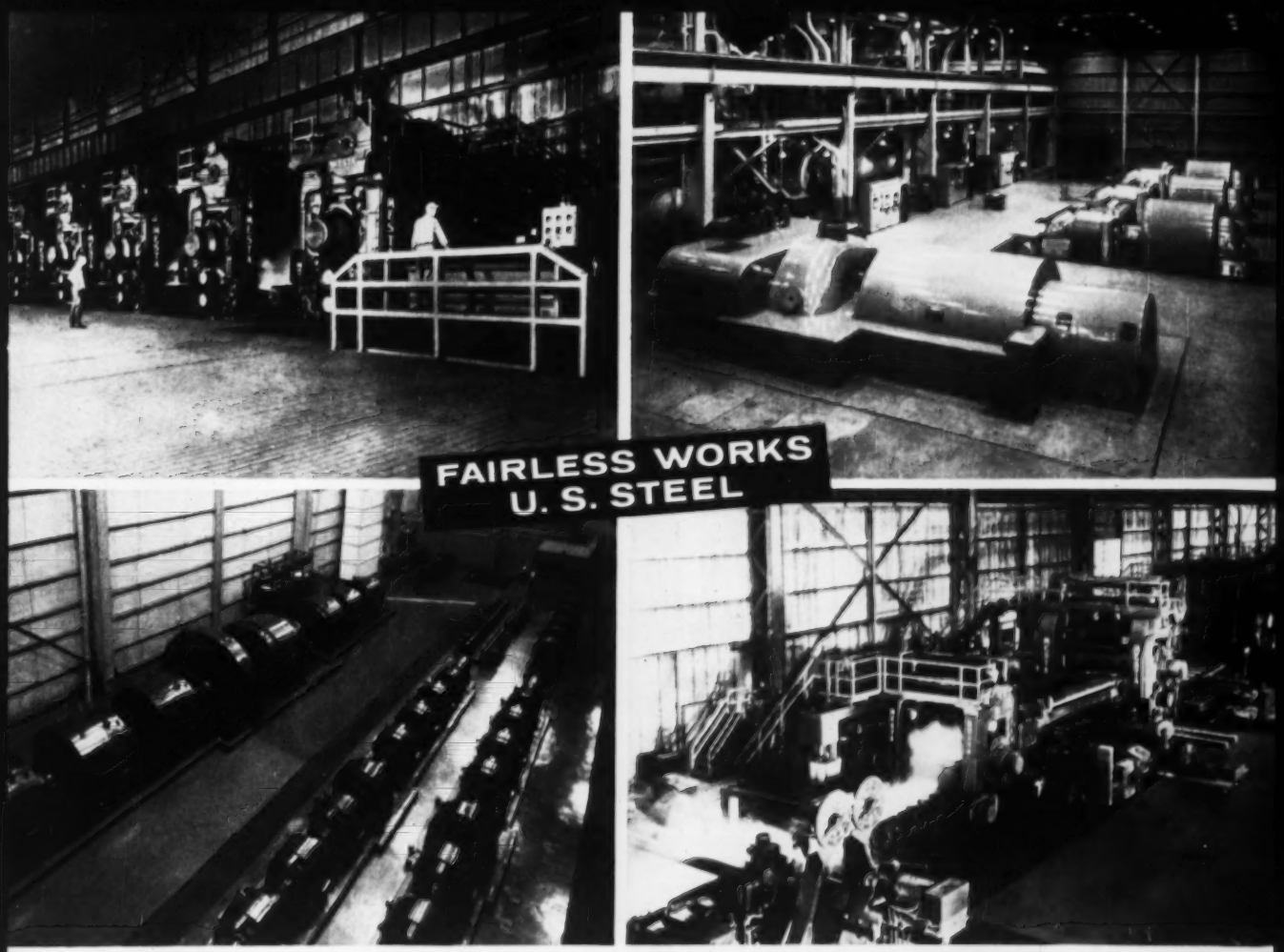
Recognizing that there are many worthwhile, necessary and prospectively good projects, particularly of a private nature, which cannot command such a guarantee, the World Bank has created an affiliate, which can operate on more of a risk basis. Called the International Finance Corp., its purpose will be to buy convertible debentures of private enterprises needing capital to invest in underdeveloped countries. The U. S. will provide about a third of the $100 million fund with which IFC will go into business.

Here is a new tool for the underdeveloped countries to use in attracting private capital to their shores. They will have to do their part in assuring the investors fair treatment, but when conditions are right, there is reason to believe that the IFC will fill a need in the foreign construction field.



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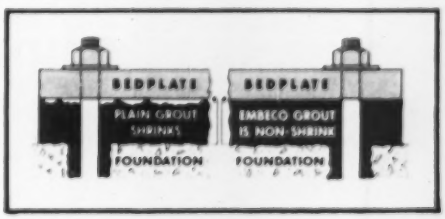

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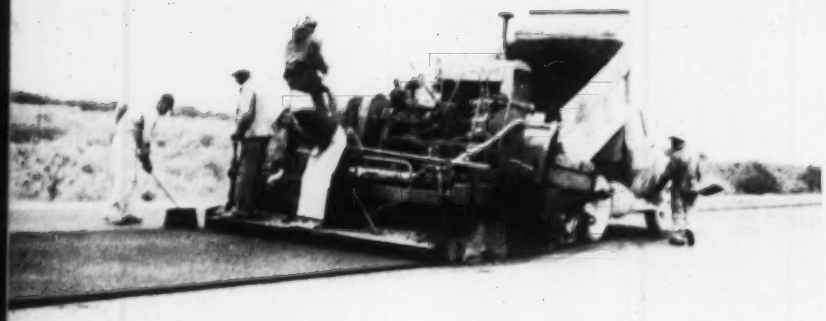

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